LIGHTING

One of the demonstration rooms in the Lighting Service Bureau of Scotland at 29, St. Vincent Place, Glasgow. This Bureau serves a very wide area and is well known throughout Scotland for the part it has played in lighting development North of the Border.

Lighting Service

Artificial light daily becomes more indispensable to our way of life and its uses more varied.

For over thirty years the Lighting Service Bureau, from its headquarters in London and through its area offices, has done much to improve lighting conditions throughout the British Isles.

With the knowledge it has gained through the years, it has attained an unassailable position as a source of inspiration and advice for all those interested in or concerned with electric lighting.

Light and LIGHTING

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Lighting and Road Surfaces

MORE than once during the past twelve months the lay Press has drawn attention to the diversity of systems of street lighting in the great metropolis of London, and pleas have been made for a unified practice. The frequent changes encountered in traversing the London area are justly said to be bewildering to the drivers of vehicles. The various boroughs have been urged to act in concert in modernising the lighting of their streets, and the public lighting engineers concerned are well aware of the desirability of getting rid of the very obvious differences now to be found on main traffic routes. There are, of course, other cities having an assortment of street lighting installations, and it is clear that unification could not be achieved quickly without impractically large capital expenditure. But, whatever the kind of installation used, its effectiveness will depend upon the nature of the road surface. Changing the character of a road surface may seriously impair the effectiveness of a given installation; so much so that what was originally considered a well-lighted street may be de-rated to a seemingly poorly-lighted one. So it would appear that there must also be a unified and stable practice of road surfacing. As in all fields, lighting and the things subjected to it are mutually dependent for a given appearance.

Notes and News

WE promised a couple of months ago to go to Greenwich and let you have our comments on the *Son et Lumière* performance. Living only a few miles from Greenwich it was not a difficult matter to arrange, but somehow it got put off until almost the last moment, and finally we got in only a day or two before the show closed.

We thought it was good—on the whole. The production was good and the lighting intelligent, though why the lights had to flash up and down during the narrative about a sea battle off Chatham or somewhere we couldn't quite understand; perhaps the idea was to make the audience feel slightly sea-sick, which in at least one case was nearly successful.

Our only criticism is in points of detail which are probably mainly matters of personal taste. For example, we hate modern music, especially that composed for the occasion. And why the music has to blare out of one set of loudspeakers whilst a gentle-voiced maiden is trying to make herself heard over another set is something which just beats us. We also agree with other critics that the sound is not very stereophonic.

On the evening we were there an unrehearsed incident added effect to the first few minutes. It happened to be high tide at Greenwich, and just as the announcer finished his opening oration ending with the words *Son et Lumière*, a very big ship going down to the sea gave a tremendous blast on its syren and glided down-stream with superstructure floodlit, completely dwarfing the buildings. This may have detracted from the effect intended by the producer, but it was certainly appreciated by the audience.

Whether these sound and light shows will be repeated another year, and whether this form of entertainment will spread in this country, are still matters for conjecture but if the size of the audience at Greenwich is anything to go by then we would guess that sound and light has come to stay. On the evening we went there were 5,000 people in the audience; they came equipped with folding chairs, picnic baskets, raincoats and umbrellas—in fact the whole paraphernalia for an alfresco evening in our climate. And judging by the comments overheard as they dispersed they all thought they had had good value for their five shillings.

Lectures on Architecture

Last month attention was drawn to the series of four lectures on architecture which have been arranged by the IES in collaboration with the Science Committee of the RIBA to be given during November. In case you missed our note we draw your attention once again to these lectures, the purpose of which is to explain the principles which are guiding forward-looking architects at the present time, both generally and in relation to certain building types. They may be compared in intention with the kind of lectures which are arranged by the BBC to explain such things as modern music to the layman.

The first lecture by H. T. Cadbury-Brown on November 7 will be general in scope and will be called "A review of present architectural thought and trends." The second and third lectures by David Medd and John Bickerdike respectively (November 14 and 21) are semi-technical in their nature, the first being on "School design" and the second on "Modern planning trends in office buildings and factories." The series will be concluded by a general talk by Bryan Westwood entitled "Planning the interior: the expression of current ideas and requirements."

All the lectures will be at the RIBA, Portland Place, and will begin at 6 p.m. We hope we haven't bored you by repeating the details of these lectures, but you can be quite certain that you will not be bored by the lectures. No tickets are required, and non-members of the IES are just as welcome as members.

Problems of Colour Vision

A symposium for those interested in colour vision from many different points of view was held at the National Physical Laboratory, Teddington, from September 23 to 25. In some ways it followed the lines of the Conference on Colour Vision held in Cambridge 10 years ago, but on this occasion there were over 150 participants from 12 different countries and 37 papers were read during the three days.

On Monday morning, after a welcome from the Director of the Laboratory, Dr. G. B. B. M. Sutherland, the Selig Hecht Commemorative Lecture was given by Professor G. Wald, of Harvard University. This was followed by tributes from three of those who knew Professor Hecht and his work particularly well, viz., Professor H. Hartridge, Dr. M. H. Pirenne and Dr. S. S. Ballard. In the afternoon, under the chairmanship of Professor Wald, five papers on visual pigments were read and discussed and in the evening a party of those attending visited the Denham Laboratories of the Rank Organization to see the processing

of colour films and other matters of special interest to them.

Tuesday's programme was especially heavy. In the morning, under Professor Wright's chairmanship, 10 papers were presented, five of them from Russian research workers. The subjects dealt with covered the measurement of luminance and colour and the second paper, by Dr. W. S. Stiles, described some of the work done at the NPL on the re-determination of the colour-matching functions on which the CIE colorimetric system is based. The extent to which lights of different colours obey the law of additivity was discussed at considerable length by a number of speakers. This law states that if $A=C$ and $B=C$, then $A+B=2C$ and it is clear that, since colorimetry depends on adding three lights of different colours to make a match with the light being measured, any departure from the law of additivity introduces uncertainty into the results.

In the afternoon the subjects dealt with included subjective colour measurement (Professor Wright), the effect of involuntary eye movements (Professor Ditchburn) and various phenomena connected with defective colour vision. The chairman, Professor Le Grand, of Paris, had the difficult task of arranging for the presentation and discussion of 10 papers in the three hours available.

The programme on Wednesday morning was much less crowded. It was presided over by Professor R. Granit, of Sweden, and was concerned with the electrophysiological aspects of vision, a subject in which Professor Granit has an international reputation for his pioneering work on the electroretinogram.

At the final session on Wednesday afternoon, under the chairmanship of Dr. Stiles, there were 10 papers all dealing with different aspects of colour vision theory, beginning with a very interesting general review of the subject by Professor Le Grand, under the title "Colour Theories and their Implications in Colour Vision."

The proceedings at the symposium were in the English language throughout and it is understood that a volume containing all the papers and a summary of the discussions will be published later by H.M. Stationery Office.

IES Summer Meeting

The biannual Summer Meetings of the IES are now an established feature in the lighting man's calendar. The next meeting is to be at Eastbourne from Sunday, May 11, to Wednesday, May 14. We would particularly draw your attention to the opening day being a *Sunday;* this is an alteration from previous practice and means that those attending will need to spend less time away from their offices during that week.

The meeting will open on the Sunday evening with a display of lighting equipment at the Grand Hotel (the headquarters hotel). Papers to be given during the next three days are :—

Lighting trends since 1945 : A survey of commercial, industrial and display lighting, by H. H. Ballin;
Hotel lighting, by W. R. Stevens and C. Dykes Brown;
Lighting and architecture, by G. Grenfell Baines and A. L. Hogg;
Lighting in Finland, by E. Paivarinne;
Lighting at the Brussels International Exhibition, by Andre Boereboom;
Lighting glassware, by D. Shellshear and G. D. Cartwright.

This sounds as fascinating a set of papers as has yet been given at any Summer Meeting. We are most interested to see that Grenfell Baines is taking part in one of the papers. His paper to the IES in 1947, in our opinion, stimulated a lot of thought and activity amongst the lighting people, and we gather that in his Eastbourne paper he will tell us without mincing matters just how good or bad we have been during the last ten years. The paper on the Brussels Exhibition will be most topical as the Exhibition will not open until April. We could comment on all the other papers, but space forbids; suffice it to say that we would not like to miss any one of them.

The programme at Eastbourne will include an afternoon and evening visit to Glyndebourne Opera House where a concert will be arranged in which some of the international singers then in residence will perform. This is a visit no one will wish to miss. The Summer Meeting will finish on the Wednesday evening with the dinner and dance when the principal guest will be Lord Chandos.

Niagara Falls

A heartening piece of news last month was that a scheme designed by the GEC for the floodlighting in colour of the Niagara Falls has been accepted. The contract is understood to be worth about £55,000. Floodlights will be mounted on the Rotunda in the Queen Victoria Park from which there is an unequalled view of the Falls. Twenty floodlights consuming no more energy than the 24 already in use will provide a brightness on the Falls at least four times as great. The light source will be high current density carbon arcs and the projectors will be fitted with remote control automatic colour-changing devices and wide-beam arrangements to provide a large range of dramatic lighting effects.

The GEC and its Canadian subsidiary Amalgamated Electric Corporation Ltd., through whom the contract was placed, are to be congratulated. The system which has been adopted was first explained to representatives of the Niagara Parks Commission in Canada on a tape recording which was flown to Canada to support a more detailed specification.

A.P.L.E. CONFERENCE TORQUAY

Report on the proceedings of the Annual Conference of the Association of Public Lighting Engineers

When at Blackpool last year it was announced that the twenty-eighth annual conference of the Association of Public Lighting Engineers would be held in Torquay, it was confidently expected that the then Vice-President, Mr. N. Axford, would succeed Mr. Harry Carpenter as President. Unfortunately Mr. Axford's doctor forbade his undertaking the far from light duties which fall to the President of the Association during his term of office. In these circumstances it was most fortunate that Mr. Carpenter was able and willing to continue as President for a second year and it was under his leadership that a very successful and well-attended conference was held from September 17 to 20 in the town which has been somewhat poetically described as the Queen of the English Riviera.

The meetings were held in the Town Hall and it was here that the conference was officially opened on the first day by the Mayor, Cllr. A. L. Goodrich, who welcomed the delegates and members, particularly those from overseas. This point was taken up by Mr. Carpenter who, after expressing the Association's thanks to the Mayor, read out the names of fourteen visitors from places as far apart as Paris, Kuwait, Hong Kong, Melbourne and S. Rhodesia. He then welcomed Mr. A. N. Irens, the Chairman of the S.W. Electricity Board, and asked him to address the Conference.

Mr. Irens, after expressing regrets at Mr. Axford's inability to assume the presidency, said that he felt the public little realised the great contribution which the Association was making to public safety. Progress was rapid and a mile of roadway could now be lit for one-third of what it cost only a comparatively few years ago.

At this point, in normal circumstances, the new President would have been inducted but on the present occasion Mr. Carpenter was welcomed to the presidential chair by Mr. J. M. Waldram, his immediate predecessor in office. It was then announced that the new Vice-President of the Association was Mr. Granville Berry, City Engineer of Coventry, and that the next conference would be held at Harrogate from September 16 to 19, 1958.

The Presidential Address

It was natural that Mr. Carpenter's opening remarks in his second Presidential Address should bear reference to the unusual circumstances in which it was delivered. He then went on to speak of the domestic affairs of the Association, mentioning first the development of Section activities. Here he referred to the conversazione of the Lancashire and Yorkshire Section held at Blackpool in April last when over 120 delegates listened to two technical papers and members of the Council answered questions on the affairs of the Association. Mr. Carpenter said that he felt such local meetings served a very useful purpose and it was the Council's intention to visit at least one Section each year. An invitation had already been received from the Scottish Section for the coming session.

The growth of the Sections had made it necessary to prepare a standard set of rules for their administration and day-to-day working, and the Sections Committee was now engaged on drafting such rules with the object, not of restricting the proper activities of Sections but of ensuring the well-being of the Association as a corporate body.

Another important piece of work carried out by the Association was the re-publication, after a long interval, of the Statistical Data on Street Lighting, prepared under the editorship of Mr. E. C. Lennox. It was possible to detect an echo of editorial laments as Mr. Carpenter expressed his sincere hopes "that the demand for this useful publication will encourage a complete response to the next questionnaire from all lighting authorities."

Evidently publication matters of various kinds have been exercising the minds of the APLE Council, for Mr. Carpenter's next remark concerned the official journal *Public Lighting*. He said that a more convenient size and the use of higher quality paper with better illustrations, as well as the inclusion of more articles of topical lighting interest, would add to the prestige of the journal and increase its value to members.

Taking Stock

Turning away from domestic matters, Mr. Carpenter referred to his address of a year ago when he presented a "balance sheet" of public lighting. He mentioned the Government's programme of main road modernisation and said that, while the trunk roads might not require lighting, many of the inter-connecting roads certainly would. "Is it too much to ask," he said, "with expenditure of the order of £160,000 per mile for roadway construction, that provision be made for adequate street lighting at a cost of approximately £4,000 per mile, or 2½ per cent. of the total expenditure?"

On the co-ordination of administration of public lighting Mr. Carpenter reported "no progress," while on the subject of uniformity in street lighting he reiterated views which he had expressed on previous occasions, *viz.*, that while all traffic routes should be lighted to the same standard as regards the basic matters such as light distribution, mounting height, spacing, etc., it was not at all necessary to have uniformity of light source or even of colour. He mentioned the new Brussels-Antwerp main road, some 50 kilometres long, which was lit throughout by sodium lamps, except where it passed through villages. There the colour-corrected mercury lamp was used and had the great merit, among others, of relieving the monotony.

Any form of standardisation of the permitted type of

light source would eventually impose restrictions on design and stifle development, and Mr. Carpenter would have none of it. What the lighting world generally, and public lighting practice in particular, needed was trained and experienced lighting engineers with imagination who could try out new ideas and developments unhampered by restrictions.

Now that sufficient light could be provided at a relatively low cost, more emphasis should be placed on the aesthetic aspects of public lighting, and in this connection the colour of the light was important. Here the new colour-corrected mercury vapour lamp had a promising future, side by side with the tubular fluorescent lamp. There was still ample scope for ingenuity and originality and the provision of quality, as distinct from quantity in lighting, especially on roads other than traffic routes, was a challenge to the public lighting engineer.

Mr. Axford had chosen for the theme of the conference "Public Lighting—Practice and Performance," and Mr. Carpenter showed how this idea ran through the papers to be presented at the technical sessions.

The Code Again

Referring to the paper by Mr. Hewitt and Mr. Stevens, he said that many lighting engineers had felt for some time that the minima laid down in the Code of Practice were far too low, while the upper limits often fell short of what was desirable and even necessary for important thoroughfares. Further, he hoped lighting engineers would give some thought to the question of the need for introducing something intermediate between the two sections of the Code. Although Mr. Carpenter was careful not to be controversial in his address as President, he is known personally to be strongly in favour of such a course.

In the concluding section of his address Mr. Carpenter referred to the value the Association placed on the presence of overseas delegates at its annual conferences, and in this connection he noted with pleasure the formation in Belgium of an organisation similar to the APLE, *viz.*, the Association Belge de l'Eclairage Public. He congratulated M. André Boereboom, who was present and whom he described as "one of our most active members," on his election as Founder-President of the ABEP.

A vote of thanks was proposed by Mr. Granville Berry, who paid tribute to the hard work done by Mr. Carpenter during the past year. He went on to speak of the programme of highway construction, making the point that if the best possible return were to be obtained from the capital outlay involved, it would be necessary to use the roads for 24 hours in the day and that meant that they should be lighted. He urged, too, that something should be done to assist small local authorities with the burden they were called upon to shoulder in lighting adequately the roads passing through their areas. The vote of thanks was seconded by Mr. D. E. Beard, the Chairman of the S. Western Section of the Association.

The delegates then left the Hall for the Upton Valley Gardens nearby where the Mayor, accompanied by the President, officially opened the exhibition of street lighting apparatus and the outdoor display of columns and large equipment which are described elsewhere in this issue.

Lighting Important Thoroughfares

The remarks in the Presidential Address regarding the inadequacy of the highest standard of lighting provided for in the Code, at any rate where exceptionally busy thoroughfares were concerned, did not fall on deaf ears and there was a large audience to listen to Mr. H. Hewitt as he gave a summary of a paper entitled "Beyond the Code of Practice." In it he and his co-author, Mr. R. Stevens, began by drawing attention to the various factors which contributed to make the street lighting situation to-day very different from what it was in 1937. In the first place there were very many more cars on the roads. Then there was the reduction which had taken place in street lighting costs, when reckoned in terms of real values. The annual cost per mile of Group A lighting was estimated at £400 in 1937. At to-day's values this corresponded to about £1,100, yet the actual cost was probably no more than £750. Finally, the public was much more conscious of the quality of the street lighting provided. In addition to such matters as colour and colour rendering, the appearance of street lighting equipment was a matter of growing concern.

The Code of Practice, however, was mainly based on the Report of the Departmental Committee issued in 1937 and it was therefore appropriate to re-examine the Code and to consider to what extent it succeeded in meeting modern requirements. After an *obiter dictum* casting doubts on the need for a code at all, the authors drew the attention of their audience to the conditions in a road such as Oxford Street, London, at the rush hour, where the road surface ceased to provide the background for silhouette vision.

Of the various factors which affected street lighting performance, the quantity of light provided was predominant and the authors stated quite definitely that the provision of first-class street lighting, over and above the bare minimum prescribed in the Code, was largely a problem of economics rather than technicalities.

The performance of a street lighting system might be assessed purely by inspection, or it might be judged by calculating values of "revealing power." Either of these methods could give quite misleading results.

Group AA Lighting

The authors then put forward their main argument which was that roads carrying very heavy traffic merited street lighting that went beyond the Code of Practice. They pointed out that this had been recognised already by a number of lighting authorities, both at home and abroad, and they gave a table showing the relevant details for 11 such installations. The new category of lighting, which they proposed to call Group AA, would be based on light outputs of 20,000 to 40,000 lumens per 100 ft. of roadway in place of the range of 3,000 to 7,000 lumens in the present Group A. Spacing, mounting height and light distribution would all be reconsidered in the light of the needs of such roads.

Reference was then made to an experimental installation recently put in in Green Lanes, Tottenham. Here the light output of 20,000 lumens per 100 ft. was provided by lanterns mounted at 30 ft., each housing two 400-watt colour-corrected mercury lamps. The authors pointed out that the use of 30-ft. mounting was no disadvantage because the streets where this type of lighting was required were usually lined with buildings of some considerable height against which a 30-ft. column looked quite inconspicuous.

Turning from technicalities to the financial aspect of the problem, the authors gave three tables showing comparative costs for different types of installations, each table referring to one of the three light output figures, 10,000, 20,000 or 30,000 lumens per 100 ft. of road. They pointed out that with the two higher classes it would be possible to reduce the cost considerably by "economy operation," i.e., reduction to 10,000 lumens for half the time of operation. Although such a plan was not satisfactory in the case of ordinary installations, it could be adopted quite safely in the higher categories because the streets where such lighting was required carried their peak load for only a limited time and at other times the 10,000 lumens would be quite adequate.

A still further increase to 40,000 lumens per 100 ft. could

not be ruled out of consideration but it had not yet been shown to be either necessary or desirable. Probably a further increase in mounting height would be necessary and very high posts at long spacings might be suitable.

In conclusion, the authors recommended that local authorities should be encouraged to put up a number of Group AA installations. There might be problems arising from the contrast with neighbouring streets, but some scheme of gradation would probably prove effective. The sodium lamp seemed not to be adapted to the design of Group AA lighting, but on the other hand the colour-corrected mercury lamp appeared eminently suitable and the use of the filament lamp should not be regarded as out of the question.

Experiment, not Codification

Opening the discussion, Dr. J. W. T. Walsh said that these super-traffic thoroughfares were exceptional and represented only a very small fraction of the total mileage of traffic routes. In most cases they required special treatment and a tailor-made installation. For a long time to come it would not be possible to codify them, although to do so might well have administrative advantages where grants were concerned. He felt that it was more important to raise the standard of all street lighting to that laid down in the Code, although experiments could with advantage be carried out to see how best to light roads carrying exceptionally heavy traffic. He disagreed with the authors when they said that the amount of light was the most important matter; spacing, light distribution and mounting height were all very important, and he felt that in Green Lanes the spacing of 120 ft. could not be satisfactory with a cut-off installation.

The desirability of further experiment was reiterated by a number of subsequent speakers, and the financial aspect of the problem was stressed by others. Mr. A. W. Christie, of the Road Research Laboratory, pointed out that even under conditions of dense traffic, silhouette vision was very important. He said that the RRL experiments on low-level lighting (referred to incidentally by the authors) were concerned with the lighting of main traffic routes outside built-up areas where there were few, if any, pedestrians. The spacing was three times that normally used.

Mr. J. M. Waldram was one of a number of speakers who paid tribute to the valuable influence which the Code of Practice had exerted on street lighting in this country. Application of the principles in the 1937 Report had given us a lead for the past 20 years but now practice was beginning to catch up with the Code and he felt that perhaps the time had come for some re-examination of the matter. He suggested that the APLE might ask the British Standards Institution to consider this.

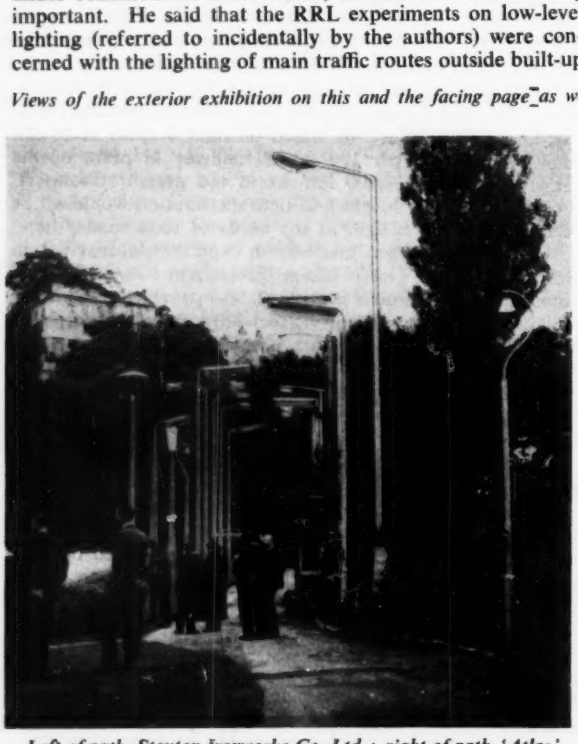
In his reply Mr. Stevens said that the authors fully appreciated the value of the Code and any new provisions should follow its main principles and not attempt to make a fresh approach. They agreed that experiment was needed; in particular the most appropriate spacing for streets of this kind needed investigation.

A vote of thanks to the authors was proposed by Mr. F. C. Smith, who said that it was bold and original thinking, such as that shown in this paper, that laid the foundations for real progress in the lighting of our streets.

The Annual Luncheon

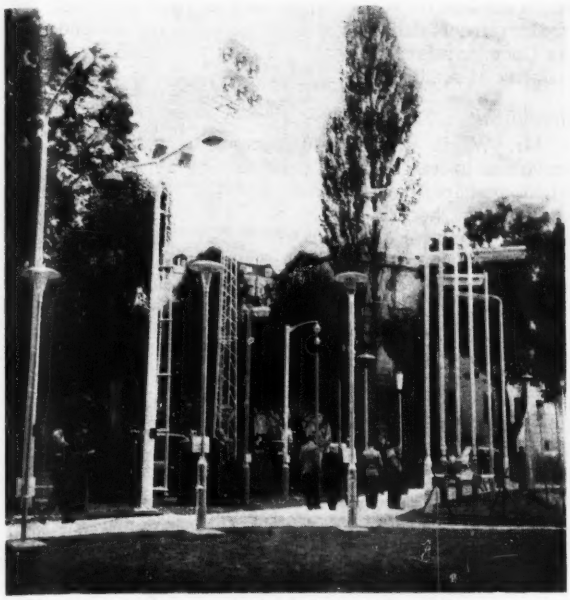
Wednesday was the day set aside for visiting the exhibition, for the annual luncheon and for the display of technical films. At the luncheon, which was held in the Town Hall, the toast of the Borough of Torquay and the Guests was proposed by the Vice-President, Mr. Granville Berry. Claiming the President as a fellow Lancastrian, he said (though perhaps in a somewhat ambiguous tone) that there was no place just like Blackpool, but for many years Torquay had been famed for the beauty of its scenery and for its climate. The Association was very fortunate in being able to meet there and to have such a welcome and so much assistance from the chief officials, especially the Borough Engineer. He then, on behalf of the Association, welcomed the guests, in particular M. André Boereboom, President of the Association Belge de l'Eclairage Public.

Views of the exterior exhibition on this and the facing page as well as page 340 include sections of the display by:—



Left of path, Stanton Ironworks Co. Ltd.; right of path 'Atlas' lanterns on a selection of columns; extreme right, Metal Developments Ltd.

Right of path, General Electric Co. Ltd.,; Left of path, Revo Electric Co. Ltd.



Poles Ltd.; Stewarts and Lloyds Ltd.; Tubewrights Ltd.; and Falk, Stadelmann and Co. Ltd.

Group B columns by Engineering and Lighting Equipment Co. Ltd. and (right of path) Revo Electric Co. Ltd.

The Mayor, in his reply, complimented the President on his Address and the Association on the exhibition and display of equipment. Both, he said, had aroused his admiration and he felt that the APLE was doing a very valuable work in improving the general standard of public lighting.

M. Boereboom then proposed the toast of the Association. He recalled his first visit, ten years ago, to the conference at Southport and how he had found there both the friendship of public lighting engineers and much technical information of value to him in his work. The papers and discussions at these conferences had made a definite contribution towards the advancement of public lighting in Belgium. A street lighting code had been drawn up and an exhibition of equipment had been held in Namur in 1950. Now an Association had been formed to carry on work similar to that done by the APLE. He concluded by referring with appreciation to the publication of the Statistical Data on Street Lighting.

In a witty reply the President expressed the congratulations and good wishes of the APLE to its sister organisation in Belgium and said that it was a great pleasure to welcome an ever-increasing number of visitors from overseas at the annual conferences. He proposed a motto for the Association, on the lines of that adopted some years ago by the Illuminating Engineering Society.

Technical Films

After lunch delegates were invited to see a number of technical films shown in the adjacent Electric Hall. The first of these, "Out of the Dark," and the final one, "The Industrious Flame," had been shown at Blackpool but were repeated for the benefit of those who had not been able to see them there. "The Glass Sun" told the story of the manufacture of electric lamps of all kinds, while "Light and Mankind," a colour film, showed how large a part artificial light now played in the activities of everyday life. The remaining film was altogether different. It was taken from a moving vehicle as this travelled along the road and was prepared by the Road Research Laboratory to find out what the driver actually saw while driving and the various factors which influenced his ability to detect objects on the roadway. As Mr. Christie had mentioned in the discussion on Tuesday afternoon, it showed clearly that silhouette vision was very important even when the traffic was dense. It also brought out very clearly the influence of road reflection characteristics on the creation of a satisfactory background.

Street Lighting Variables

On Thursday morning Mr. H. R. Ruff presented a rather highly technical paper on "The Relative Importance of Factors Affecting Street Lighting Performance." In this he and his co-author, Mr. G. K. Lambert, described a long and detailed investigation they had undertaken in order to provide a scientific basis for assessing the contributions made by the different factors which determined the degree of merit of a street lighting system.

Their first step was to list the criteria by which such a system was judged. First there was the "revealing power," depending partly on road surface luminance and partly on the illumination of the objects which had to be made visible. Next came glare in two forms, disability glare (termed "veiling glare" by the authors) calculable from the well-known Holladay-Stiles formula, and discomfort glare which could be assessed by means of Hopkinson's glare constant.

From a knowledge of the physical characteristics of a street lighting system and those of the road surface it is possible to calculate all the quantities just enumerated, but the process is extremely laborious and to repeat it for a large number of combinations of the different variables becomes practically impossible by ordinary methods. The authors, however, used an electronic computer and so obtained (a) values of illumination at all points in a grid covering one unit of the installation, the grid unit being 5 ft. by 30 ft., (b) values of road surface luminance at corresponding points from 90 to 360 ft. ahead of the observer, (c) illumination at the observer's eyes for lanterns up to 750 ft. distant (with separate weighting for calculating disability glare and Hopkinson's glare constant) and for observer positions at intervals along one unit. From these figures a set of values of revealing power and glare constant

were calculated for various source luminances typical of practical light sources.

Next came a classification of the variables affecting the performance of an installation. These were divided into two classes. The direct variables, i.e., those which could be seen to have a direct influence on performance, were light output and distribution, road surface characteristics and the arrangement of the lanterns, including spacing, mounting height and distance between rows. The indirect variables were those, such as supply voltage, which influenced results through their effect on a direct variable. Then there were variables which could not be quantitatively assessed, such as the effect of background and the influence of colour of the light, while finally there were the uncontrollable variables, chief among them the weather conditions.

Even with the facilities provided by the electronic computer, it was necessary to limit severely the range of values studied for each direct variable. The authors chose a straight level road, 36 ft. wide and without camber, and six typical light distributions, five of them medium-angle-beam and the sixth a cut-off distribution. Three mounting heights were used, *viz.*, 20, 25 and 30 ft., to give satisfactory bracketing of the standard 25 ft. Similarly the three spacings selected were 30 ft., 20 ft., and zero, corresponding to central mounting.

Road Surface the Dominant Variable.

As regards road surfaces, the authors selected three, (a) rolled asphalt with pre-coated chippings, (b) non-skid rock asphalt and (c) ½-in. quartzite, and the reflection characteristics were taken from curves supplied by the Road Research Laboratory.

From the mass of results obtained for 162 combinations of the variables the authors selected a few for examination in their paper. With regard to road surfaces, the quartzite was found to give the best performance in the case of a cut-off distribution but the rolled asphalt was better for a medium-angle-beam system. Variations with the viewpoint of the observer were shown in two figures, one for a medium-angle-beam and the other for a cut-off type of distribution. Other figures showed the variations with light output, with source luminance, with light distribution and with mounting height.

The effect of the variables not assessable numerically, particularly that of the colour of the light, were discussed by the authors, and they described an experimental comparison between sodium and mercury installations in which all the other variables, including source size and luminance were made identical. They found that from the motorists' point of view, colour was of secondary importance.

The authors' conclusions were interesting and would repay careful study. A medium-angle-beam distribution, they said, gave less cyclic variation than a cut-off system as the observer travelled along the road, but the amount of distraction produced did not seem to be serious in either case. With average road surfaces and spacing conditions 10,000 lamp lumens per point should provide adequate lighting. Source luminance should lie within the range 3 to 100 candelas per sq. in., to minimise glare. The light distribution had a major effect on discomfort glare although this depended even more on the road surface; light at high angles was much more glaring if the road surface luminance was not increased.

The calculations, in fact, confirmed the critical effect of road reflection characteristics. Small changes in the road surface had much more effect than small variations in light distribution, and they could convert a good installation into a poor and glaring one which it was difficult to make satisfactory.

With normal road widths and spacing the 25-ft. mounting height ensured reasonable uniformity of road luminance and freedom from glare. With the spacings recommended in the Code, satisfactory lighting should be obtained with the majority of road surfaces.

Simplification, Sooner or Later

Mr. W. R. Stevens, in opening the discussion, endeavoured to reassure those practising lighting engineers who might, perhaps, be somewhat dismayed at the prospect of using the methods described by the authors. These were, he said, a natural development in design methods and, like earlier developments, they would in due course be simplified and codified for everyday use. This extension of existing techniques had been made possible by the use of a new tool, the electronic computer, and he congratulated the authors on the way in which they had pressed this tool into the service of the public lighting engineer.

There still remained, however, the problem of deciding which of the different variables should receive most weight in an overall appraisal and here there was much room for difference of opinion. For instance, Continental countries were very intolerant of glare and it might well be that this factor would be weighted less heavily here than abroad.

At the conclusion of his remarks Mr. Stevens recited some lines which had a familiar ring, as follows:—

The computer and the lighting man
Were trying hard to find
How all the factors used in lighting
Streets could be combined.
"We'd like to work it out," they said,
"But what a frightful grind!"

Mr. A. J. Harris thought that the use of averages was open to criticism. For example, when considering road surface brightness the darker areas should be weighted more heavily because they presented the greatest hazard.

Mr. A. W. Christie spoke about road surfaces and their characteristics. He said that it was possible to have a surface which combined good light diffusion and short "tails" in the reflection pattern with satisfactory performance as regards skidding. A coarse surface, too, would not flood like a fine-textured surface and therefore its behaviour as regards reflection was much less affected by rain.

Mr. L. Osgood said that the description of the methods used by the authors was difficult for the ordinary public lighting engineer to follow and he looked forward to having some tables by means of which he could make his own assessment of the extent of the glare in an installation.

Mr. F. C. Smith urged a statistical approach to the subject. He felt that if a large number of observers were used it should be possible to assess the significance of the relationships between the different variables and visual judgments of the results and in this way to arrive at a reliable method of evaluating overall performance. He, too, criticised the use of the simple average and in this he was supported by Mr. C. C. Smith, of Liverpool.

Mr. Lambert began his reply to the discussion by saying that the main object of the paper was to indicate possible uses of the electronic computer for the solution of street lighting problems. It was true that in order to give a concise account of the vast mass of information provided by the computer, simple averages had been used but this did not exclude the adoption of a more highly developed method later on. Mr. Osgood might rest assured that the tables he asked for would be available in due course but the use of the computer was not free from difficulties, particularly as regards programming.

A vote of thanks to the authors, proposed by Mr. J. M. Ward, was carried by acclamation.

(Continued on page 337)

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F

Aesthetics and Civic Pride

The afternoon paper was complementary to that read in the morning. While the latter was severely technical, Mr. C. R. Bicknell and Mr. J. T. Grundy brought forcibly before their audience the need for a more imaginative approach to the subject of public lighting. The title of their paper was "The External Scene—Arouse and Stimulate a Sense of Civic Pride," and in it they supported Mr. Duncan Sandys' plea for more tree-planting in streets and squares, although this should be carried out in consultation with the public lighting engineer, and the trees should be chosen with due regard to their habits of growth. It was important that local authorities should endeavour to create a satisfactory general picture by night as well as by day, but however carefully the lighting was planned, that completely uncontrollable factor, the weather, could upset everything. Motor vehicles tended to be more colourful to-day than they were a few years ago and the lighting ought to do justice to the variety of finishes and not flatten out all colours in a dull monotony.

Turning to more contentious matters, the authors said that density of traffic should have a direct bearing on the way in which a road was lighted; when the density exceeded a certain value consideration should be given to the use of a system designed to provide direct illumination rather than silhouette vision. Their paper included a diagram of a lantern housing four tubular fluorescent lamps. The upper pair were provided with reflectors and produced a high-angle-beam distribution, while the light from the lower pair was redirected so as to produce a flooding effect. During hours of dense traffic all four lamps were used, while at other times the lower pair of lamps was switched off, leaving a normal high-angle-beam distribution.

In their effect on the visual scene, lanterns and columns were predominant as far as public lighting was concerned and it was these features which received most attention from the public and from the Press. Great strides had been made in both; columns had become more slender and simple in design, while box-like lanterns had given place to more pleasing forms. Wall-mounted vertical fluorescent lanterns merged into their background and became quite inconspicuous by day, though the same could not always be said of the post-top vertical lantern.

The Intermediate Mounting Height

With regard to mounting height the authors, in their paper, pleaded for more latitude than that allowed in the Code. They poured scorn on the argument that an intermediate height was undesirable because it would leave the motorist uncertain whether to use headlights or not, and they urged that lighting authorities should have freedom of action in the matter, particularly because it would facilitate the satisfactory lighting of tree-lined roads. There were, too, situations where Group A lighting was desirable from the traffic point of view but 25-ft. columns would be completely out of keeping with the surroundings.

The next few sections of the paper dealt with the lighting of traffic roundabouts, with the problems created by controlled parking and the use of meters (presumably in the less used and therefore less well lighted roads) and with traffic signs and signals. The flashing Belisha beacon was criticised on the grounds that by day it was almost impossible to detect whether the lamp was operating or not. A higher brightness by day than by night was advocated.

Advertising signs and shop windows were considered together and here the authors pleaded for good taste and restraint. Much depended on the locality; a sign which was quite acceptable in Piccadilly Circus might well look garish and out of place in a normally lighted thoroughfare. Shop-window lighting, too, should be designed with an eye to its general effect in the neighbourhood and should not dazzle either the window gazer or the road user. Chambers of Commerce might well concern themselves with this matter and seek advice from the local public lighting engineer or some other lighting specialist.

Floodlighting

The use of the word "floodlighting" as applied to buildings was roundly condemned by the authors, who said that, while flooding with light was necessary for sports arenas, to treat a building in this way was to kill all its character and produce a dead and flat effect. It was frequently much more dramatic to pick out a single feature of a building and spot-light that, as had been done most effectively with the figure of Justice on the Old Bailey building. Other examples were to be seen at St. George's Chapel, Windsor, and at Guildford Cathedral where two 500-watt spotlights were used to pick out the cross against the background of the night sky.

On the subject of lighting for recreation the authors made the interesting suggestion that the grassed areas adjacent to many of the new large blocks of flats should be floodlighted to encourage younger children to play there instead of in the streets.

The paper concluded with a strong plea for correlation of effort, so that the integral effect of the lighting might be to make the streets safer and at the same time stimulate a sense of civic pride.

Mr. Bicknell, presenting the subject of the paper rather than the paper itself, emphasised the close relationship between town-planning and public lighting. He showed a number of slides and models to illustrate his points and added some slides of street lighting in Kuwait and of floodlighting in Melbourne during the Olympiad. At the conclusion of his remarks he demonstrated, by means of a large model of part of a town, how different localities and different types of buildings required special treatment from the lighting engineer.

Discussion

The discussion was opened by Mr. C. Harper, who agreed with some of the remarks made in the paper and disagreed with others. In particular he supported the plea for an intermediate mounting height, and he was opposed to any attempt to make the external scene look the same by day and by night. While it was true, as stated by the authors, that the Town Planning Institute did not include lighting in its examination syllabus, the much senior body, the Institution of Municipal Engineers, had done so for many years, and in fact it had awarded a premium this year for a paper on street lighting.

Dr. H. H. Ballin followed with a reference to the Light and Sound spectacles recently staged in this country, particularly that at Woburn Abbey, and he showed a number of slides of some of the lighting equipment used.

Mr. Brodie, of Ayr, made a fighting speech in which he vehemently opposed the use of a mounting height intermediate between those in the Code. He said, too, that he could not understand the difficulty of lighting tree-lined roads, for in winter there was no foliage to interfere with the lighting and in summer the lighting was not needed. This last statement was queried later by Mr. Grundy in his reply.

Mr. J. C. Cotton, of Portsmouth, urged that the painting of columns should receive attention. Use of a grey-green paint could make columns unobtrusive against a background of similar colour, while a brighter hue such as powder blue could help to brighten a rather drab area.

Mr. Grundy made brief comments on some of the points

raised by different speakers, and he then mentioned that Mr. Bicknell was to retire in a few days' time, so that the presentation of this paper might be described as his "swan song."

A vote of thanks was proposed by Mr. N. Boydell, who said that the authors had performed a valuable service in drawing the attention of public lighting engineers to the ideas which they had set out in their paper.

Bridges and Tunnels

The paper read at the final technical session on Friday morning broke new ground. The authors, Mr. C. C. Smith and Mr. J. M. Waldram, chose as their subject "The Lighting of Bridges and Tunnels," both very difficult problems for the public lighting engineer. With a bridge the problems are not only technical but aesthetic as well, and the authors dealt with both. Perhaps the chief technical difficulties, they said, were the lack of background and the absence of anything on which to mount the lighting equipment, except in the case of large structures such as a suspension bridge. The aesthetic problem was to satisfy the architect, who usually desired that the equipment should be as inconspicuous as possible, and that it should be placed on the parapet outside the footpaths, with the mounting height at a minimum.

The absence of background meant that visibility could not be produced in the conventional way. It was necessary to illuminate objects directly and the distribution required was therefore one which directed light mainly across rather than along the carriageway, the spacing being much shorter than usual. After mentioning a number of possible means of achieving the desired result, the authors described an experimental bridge reflector which had been found satisfactory.

The next part of the paper contained a description of some outstanding or unusual bridge lighting installations. Waterloo Bridge was an example of conventional lighting with somewhat slender posts which were not unduly conspicuous as seen from the river. A more or less freak installation was that at the Pont du Carrousel in Paris, where 70-ft. telescopic posts could be lowered to 47 ft. during the day. The Pont St. Cloud, too, was lighted from four 120-ft. masts, one at each corner (see *Light and Lighting*, September, 1956).

An unusual method of lighting a bridge was to use a continuous line of fluorescent lamps mounted on the upper coping of the parapet. The long shadows usually associated with low mounting disappeared when a continuous line of light was used and several installations of this kind had been put up in Belgium. One objection to the system was its expense; using ordinary hot cathode fluorescent lamps the lamp lumens per 100 ft. of road would be over 100,000. It was, however, very satisfactory to the architect and the authors said here that in many cases there might be no system of bridge lighting that would satisfy at the same time the architect, the lighting engineer and the city treasurer.

Tunnel Lighting

The second part of the paper dealt with the problems met with in lighting tunnels. Many of these, said the authors, had never been satisfactorily solved. The method used was always to light the walls so that they could provide the necessary background. Reliability and long life were most important, for a tunnel was used 24 hours a day throughout the year and even momentary extinction would be extremely dangerous.

In older tunnels the equipment was generally housed in boxes built into the walls, but it was now more usual either to mount fittings on the walls, or in the angle between wall and roof, or to use tubular fluorescent lamps in protecting glass tubes fixed a few inches away from the tunnel wall. The use of continuous rows had technical advantages but was expensive and unless the lamps were used at reduced loading the tunnel would be over-lighted. It was emphasised that the most important single factor in tunnel lighting was the surface of the walls and roof. Owing to repeated reflections the luminance of the walls fell much more rapidly than their reflection factor and methods adopted for the cleaning of some large tunnels were described.

A long section of the paper dealt with what the authors described as the most serious problem in lighting a vehicular tunnel, *viz.*, lighting the entrance. It was pointed out that a driver needed to see what was some 300 feet ahead of him, so that objects just inside the tunnel should be visible when he was nearly 300 feet from the entrance, and therefore adapted to full daylight. To make matters worse, a section of the atmosphere 300 feet thick might well have a luminance, due to diffusion, of the order of some 40 foot-lamberts, whereas the luminance of the tunnel walls due to artificial lighting probably did not exceed one or two foot-lamberts.

There were two lines of attack. One was to reduce the level of adaptation of the driver and the luminance of the atmosphere between him and the tunnel, the other was to increase very greatly the luminance of the tunnel entrance. A solution along the first line had been attempted at Le Havre (see *Light and Lighting*, November, 1956) where funnel-like structures had been erected at the approaches to the tunnels so as to give a gradual reduction of the daylight illumination.

The other line of attack was more common and in many tunnels increased lighting was provided at the end sections. Using the conception of "apparent brightness" the authors calculated that a driver adapted to 1,000 ft.-lamberts (typical of daylight) would need a background luminance of 60 ft.-lamberts and this in turn would mean a direct illumination of 85 lm/ft^2 on the walls, a very high value indeed.

It appeared possible to provide the necessary high luminance, without the need for very high general illumination of the walls, by mounting a number of large louvers on the walls near the entrance and giving these a high luminance by one means or another. They could be specially illuminated or they could form the front faces of box-like fittings housing fluorescent lamps. Another possibility was to cover the louvers with retro-reflecting material which would reflect to the driver's eyes the daylight it received from the tunnel entrance. In his presentation of the paper, Mr. Waldram emphasised that the use of louvers was still at the experimental stage.

Mr. A. W. Gostt, opening the discussion, showed some slides of bridges over the Brussels-Antwerp trunk road. The sides of these bridges were illuminated from below and they were very useful in relieving the monotony of a long motor road passing through open country.

M. Boereboom took up some of the authors' criticisms of the parapet lighting on bridges. He agreed that it was expensive, but it was technically good and in later installations glare had been avoided and the distribution of light over the roadway improved. He mentioned that in the tunnels now under construction in Brussels the portals were dark in tone, while the illumination was some 150 lm/ft^2 during the day and 10-15 lm/ft^2 at night.

Mr. R. S. Hazell gave some details of the lighting in the Blackwall and Rotherhithe tunnels, while Mr. G. V. Harrap described some of the difficulties encountered at Dartford. He said that the tendency was for future tunnels

to be subject to tolls, so that drivers would not be able to approach the tunnel at speed.

Mr. A. W. Harris pointed out that a tunnel was well adapted for making use of specular reflection, provided the shape of the tunnel and the positions of the light sources were suitable.

After Mr. C. C. Smith had commented on various matters raised during the discussion, a vote of thanks was proposed by Mr. Granville Berry and carried by acclamation.

The conference concluded with a brief business meeting at which the President expressed the Association's thanks to all those who had contributed to the success of the proceedings.

Display of Street Lighting Equipment

The A.E.I. LAMP AND LIGHTING CO. LTD. exhibits included a new range of sodium street-lighting lanterns for Group A and Group B roads and a new 2-ft. twin-lamp fluorescent lantern for Group B roads. Features of the sodium lanterns, known as the "Mazda Amber Mk. IV" range, include a gravity die-cast silicon aluminium alloy canopy with a lightly diffused clear "Perspex" bowl with sealed refractor panels and improved bowl hinging and clipping using "Diakon" and stainless steel. A bowl ring has been eliminated by the redesigned hinging and fastening system which employs "Diakon" hinge blocks cemented directly to the "Perspex" bowl and hinged to the canopy on stainless steel pins. The Group A lanterns (see page 353) are for use with 85- or 140-watt sodium lamps and side-entry mounting. The Group B lanterns are for use with 45- or 60-watt sodium lamps and top entry mounting.

The new fluorescent 2-ft. 40-watt twin-lamp streetlighting lantern for Class B roads, the "Mazda Residential Mark II" (see page 351), has been styled on similar lines to the new sodium range and incorporates many of the new features including "Diakon" hinge blocks and recessed stainless steel toggle fastening. Lamp auxiliary gear, earth terminal, cable clamp and terminal block are housed on a tray attached to the canopy. Light control is by means of anodised aluminium reflectors which also carry the lamp clips and push-on bi-pin lamp-holders.

In the exterior display 25-ft. spun concrete "Trifoil" columns, with both concrete and tubular steel arms, and the "Consul" concrete column were shown.

A feature of the ATLAS LIGHTING LTD. stand was the "Alpha Three" mercury lantern for Group A roads (see page 347). Of original design and appearance the lantern accommodates one 250-watt or one 400-watt colour corrected mercury vapour lamp and has an aluminium reflector and "Perspex" diffuser. The "Alpha One" sodium lantern, also shown, was recently selected for exhibition at the Eleventh Milan Triennale. In the outside display a number of Atlas lanterns for fluorescent, mercury, sodium and tungsten lamps were shown on columns.

Some of the latest developments in electro-matic traffic signals were exhibited by the AUTOMATIC TELEPHONE AND ELECTRIC CO. LTD., whose stand was designed to illustrate how the latest types of traffic control equipment can help to solve most present-day traffic problems.

BERGO LTD. showed examples of bollards lit by fluorescent lamps and a special type of bollard designed to be particularly effective in foggy weather. A portable island site complete with gas illuminated bollards was exhibited. Also shown were a selection of road traffic signs, the "Bergolite" external lighting unit and steel columns for Group B lighting.

The main feature of the BRITISH ELECTRICAL DEVELOPMENT ASSOCIATION stand was the story in text and illustration of the relighting on the Royal Burgh of Haddington where the main roads are lit by wall-mounted and pole-mounted fluorescent lanterns and the remaining streets by mercury lamp lanterns. Signed statements made by local officials on the effect of the new lighting on the town were shown. Full details of the scheme with costs were given; with 60 lamps more than the old gas scheme the town is not only better lit but the cost to the town has been reduced.

This year CONCRETE UTILITIES LTD. took part in the outside column display only, although a selection of models of their more popular column designs with "Phosware" lanterns were on show on the Phosco stand in the indoor exhibition. Among the columns shown outside was the Highway "X" with various brackets and lanterns, also the New Fluted column with "Phosware" Georgian lantern, recently supplied to the "Cutty Sark" Dock, Greenwich.

One of the new lanterns shown by THE ENGINEERING AND LIGHTING EQUIPMENT CO. LTD. was the "Silver Ray," which is primarily designed for use with 250/400-watt MBF/U lamps (see page 346). In the Eleco "Two" lantern for two 2-ft. 40-watt fluorescent lamps fibreglass is used, a material which combines strength and durability with lightness. The top of this lantern can be supplied in various colours which will not require painting. Several improved versions of the "Golden Ray" lanterns, and a wide selection of other types, were shown. This company also introduced for the first time a range of 25-ft. and 15-ft. concrete columns under the name "Elecoslim."

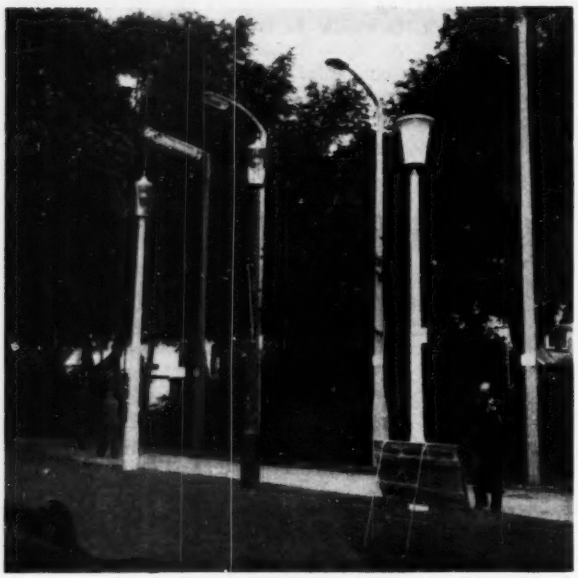
FALK, STADELMANN AND CO. LTD. showed a variation of their "Beaufort" lantern for post-top mounting having a 25-in. diameter hood (see page 355). This brings the number of variations of this lantern, including bracket-mounted versions, up to 28. They are intended for Group B street lighting or decorative exterior lighting. Other new lanterns which were shown were the "Fulmar VI" enclosed type 45/60-watt sodium lamp lantern, and the "Fulmar IX" open type 85/140-watt sodium lantern.

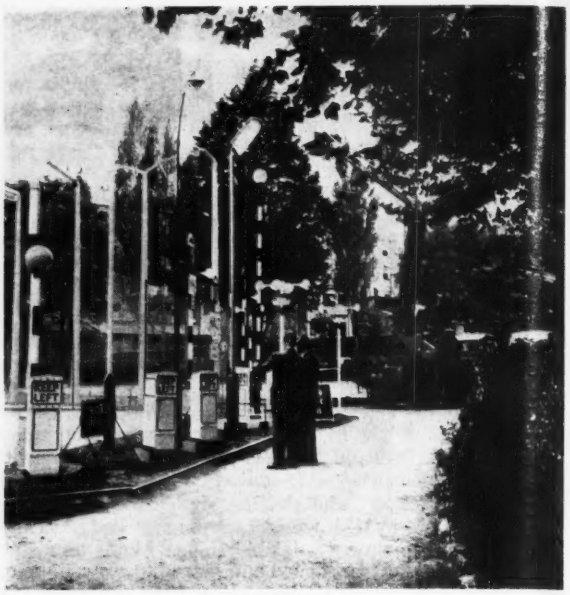
A. C. FORD LTD. showed two new sodium lamp lanterns (see page 353) for Group B lighting using 45-and 60-watt sodium lamps. Extensions to the Group A range include a lantern for use with 300/500-watt tungsten lamps or 250/400-watt vertical mercury lamps. In both cases Holophane refracting glassware is used.

FRANCO TRAFFIC SIGNS LTD. participated in the indoor and outdoor displays. Of interest for the conversion of unlit signs to illuminated signs were the "Exlite" fitting and the "Strap-on-root" switchbox which provides a convenient method of housing switchgear for the lighting fitting. Bollards lit by tungsten and fluorescent lamps were shown and signs incorporating "Scotchlite" reflective material (authorised for use under the new Ministry of Transport Regulations 1957) formed an important part of the Franco exhibit.

Four new lanterns, and some design improvements in lanterns introduced in 1956, were exhibited on THE GENERAL ELECTRIC CO. LTD.'s stand.

These included a new multi-tube fluorescent lantern of contemporary design, with a tapered one-piece "Perspex" enclosing bowl which incorporates sealed-in refractor plates.





Left, Concrete Utilities Ltd.; right, Bergo Ltd. and Franco Traffic Signs Ltd.

The lantern is designed for side-entry mounting, and when the mounting bracket is raised a few degrees it presents a "streamlined" appearance. It can be supplied for use with two, three or four 5-ft. 80-watt fluorescent lamps. Also exhibited for the first time was a vertical-mounting tapered lantern fitted with a hinged door for easy maintenance and housing four 5-ft. 80-watt lamps. Fluorescent lamp lanterns housing two 2-ft. 40-watt lamps suitable for side-road lighting were also shown.

Several lanterns for main- and side-road lighting, housing integral or detachable jacket sodium lamps, were exhibited in aeroscreened and cut-off forms. Three improved versions of mercury lanterns for main-road use were also shown.

A special exhibit was a new post-top lantern designed by the GEC for British Railways' platform lighting. It houses two 5-ft. 80-watt lamps and, as a protection against corrosion, the lantern body is constructed of fibre glass.

Lamps exhibited included new de luxe colour-corrected mercury fluorescent lamps and a special range of miniature fluorescent tubes, of 9-in. 6-watt, and 12-in. 8-watt, for bollard lighting. Integral sodium lamps, and apparatus demonstrating the tests for shock resistance undertaken during their development, were shown.

In the outdoor section of the exhibition, the GEC exhibited for the first time the slim "Brevis II" concrete column which was designed for Crawley Development Corporation and is now available generally. Another innovation was an octagonal tapered steel 25-ft. column. A selection of "Altus" and "Brevis" pre-stressed concrete columns in various aggregates and finishes, with brackets to suit all designs of lanterns, and a decorative West African hardwood column designed for forecourts and gardens, were also shown.

GOWSHALL LTD. showed externally illuminated signs and guardposts. Included were miniature fluorescent lamp assemblies for internal or external lighting.

HOLOPHANE LTD. gave prominence to their latest oval bowl refractor for Group A lighting (see page 346). This refractor (22/4257 D) has been developed for use with 250- and 400-watt fluorescent bulb lamps (type MBF/U), but it can also be employed efficiently in conjunction with MA/U lamps of similar rating. To provide a non-axial asymmetric distribution the refractor is tilted at 15 degrees, and in the more usual horizontal position it gives a wide asymmetric distribution. The lantern body is diecast in silicon aluminium alloy. Also on display were Holophane Group A and Group B lanterns for different lamps and a range of refraction domes and bowls.

THE HORSTMANN GEAR CO. LTD. showed a comprehensive range of their automatic control equipment for gas and electric street lighting. A new version was the type K Mark II time switch, which has been developed as a low-priced synchronous motor unit which is economical in both operating and maintenance costs.

The main exhibit of MEGATRON LTD. was their C.5a light meter, which has been reduced in price and improved by enclosing the photo-cell in a "Perspex" dome to make a completely air-tight enclosure. The weight of the instrument in box is 21 lb., including the duraluminium rod which screws into the box to raise the cell 3 ft. above road level.

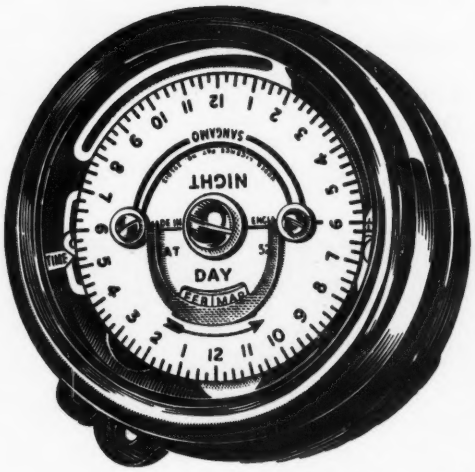
A new aluminium alloy column was shown by METAL DEVELOPMENTS LTD. Known as the "Lucerna" and for Group B lighting this column weighs only 24 lb. The column has a base diameter of 8 in. and tapers to 2¾ in. at the top. They are finished with one protective coat of aluminium paint. Brackets of various designs are also available.

PHILIPS ELECTRICAL LTD. showed a comprehensive range of their lamps and lighting equipment of interest to the public lighting engineer, including a full range of sodium, mercury and mercury fluorescent lamps for street and amenity lighting.

PHOSCO LTD. showed a wide range of lanterns of various types for sodium, mercury, fluorescent and tungsten lamps including a new fluorescent lantern of Group A lighting (see page 346) and a new post-top lantern for Group B lighting (see page 356).

POLES LTD. showed a wide range of their "Adastra" tapering galvanised steel columns for 15-ft. and 25-ft. mounting height. Two floodlight supports, one of 35 ft. and the other 55 ft., were also displayed. New items being exhibited for the first time were the "Curlew" arm, which is a curved tapering tubular arm available in single or

(continued on page 343)



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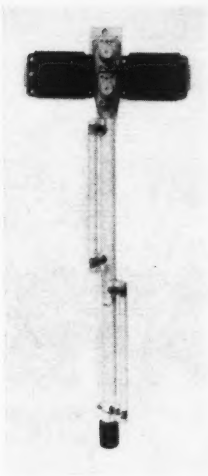
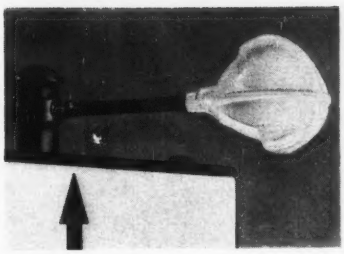
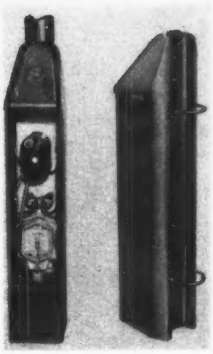


Above, Gowshall fluorescent 'Signlite.' Right, Gowshall fluorescent fitting for guardposts.





Above, Franco 'Exlite' type III *external sign lighting fitting. Right Franco 'Strap-on-Root' switchbox.*

double form, and a low price floodlight support, particularly suitable for lighting sports grounds, football pitches, car parks, etc. This pole is provided with steps for gaining access to the lanterns which are carried on a simple frame support.

The REVO ELECTRIC CO. LTD. showed several newly introduced items together with a representative selection from their standard range. One of the new exhibits was a development of the "Sol-Etern" lantern for 5-ft. 80-watt fluorescent lamps (see page 347). By re-designing, this fitting has been considerably reduced in size while still retaining its complete reflector system ensuring the maximum light efficiency. It now comprises a cast-aluminium alloy end housing, with an enclosing member in the form of a "Perspex" sleeve which slides along guide rails for easy access to lamps and gear which is mounted on a hinged tray. A junior version, suitable for 2-ft. lamps, was also displayed.

Other new additions included a range of side-entry lanterns for 60- to 140-watt sodium lamps, comprising a complete "Perspex" body with internal refractor plates and cast alloy end-housing; a Group A lantern (see page 349) for 250/400-watt mercury or mercury fluorescent lamps comprising a one-piece glass bowl and cast alloy canopy carrying the reflector system and a post-top lantern for 2-ft. fluorescent lamps with a tapered "Perspex" cylinder surmounted by a rust-proof spun steel canopy and cast base (see page 352). The outdoor display included the new "Lyric" concrete column for Group B roads.

The main feature of the SANGAMO WESTON LTD. display was the range of Sangamo synchronous time switches. Many different types are available, the most popular of which, for street lighting control, is the Model S251 Form 13 and its variants.

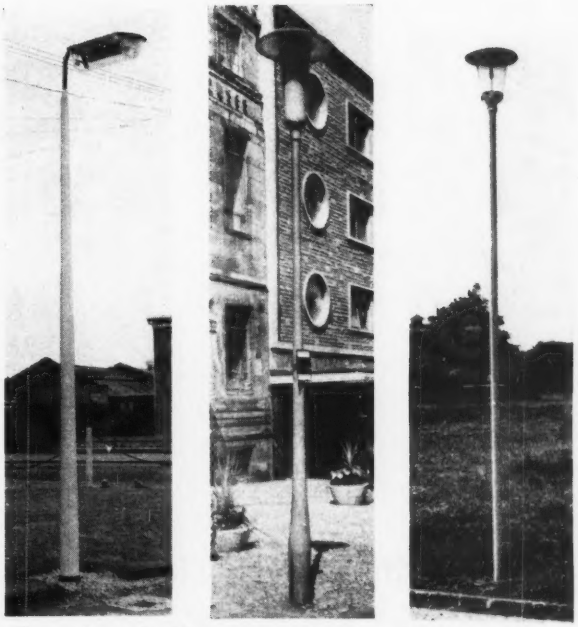
The accent of the SIEMENS EDISON SWAN LTD. exhibit was on the improvement in the appearance of lanterns as much as on their functional efficiency. Their "Kuwait" lantern has been extended to cover a range of lanterns of similar style for lamps from 2 ft. to 5 ft. A range of wall mounted lanterns was also shown and new lanterns included the "Orson A" and "Orson B" for 85/140- and 45/60-watt sodium lamps respectively. (See pages 350 and 354.)

SIMON ENGINEERING (MIDLANDS) LTD. showed the two versions of their Simon Hydraulic Platform. The standard model gives a maximum working height of 40 ft. with a working radius of 26 ft.; the new small model gives a maximum working height of 30 ft. and working radius of 17½ ft.

THE STANTON IRONWORKS CO. LTD. displayed nine prestressed spun concrete lighting columns made by the Stanton method of combining prestressing with the centrifugal process of concrete manufacture. They included a new column for Group B lighting suitable for post-top lanterns or for side- or top-entry lanterns.

The display of STEWART AND LLOYDS LTD. included twelve designs suitable for use on either Group A roads or Group B roads. The indoor display included photographs of lighting installations, models and some detailed samples of lighting column construction.

VENNER LTD. showed a comprehensive range of their time switches. A new feature was an early-morning switching device fitted to the solar dial of time switches types MSQP and TJSSP, and which will shortly become available on the MSSP range. This is to cater for the increasing demand for two-period lighting—from sunset to around midnight, and early-morning lighting (usually from 5 a.m.) until sunrise. Another innovation was a protective dustproof cover in clear plastic as an alternative to the standard cast metal box. This allows for visual checking of the daily and monthly dials, and the manual operation device is accessible for testing, without having to remove the cover.



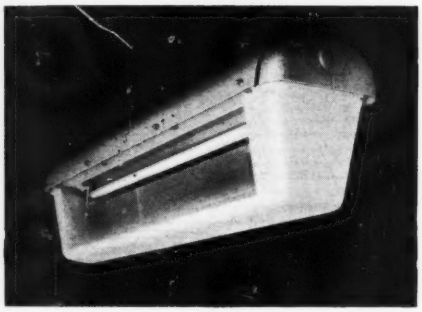
Three columns for Group B Lighting: left, Metal Developments Ltd. 'Lucerna'; centre, Poles Ltd. 'Beta One'; right, Revo 'Slenderline.'

New Street Lighting Lanterns

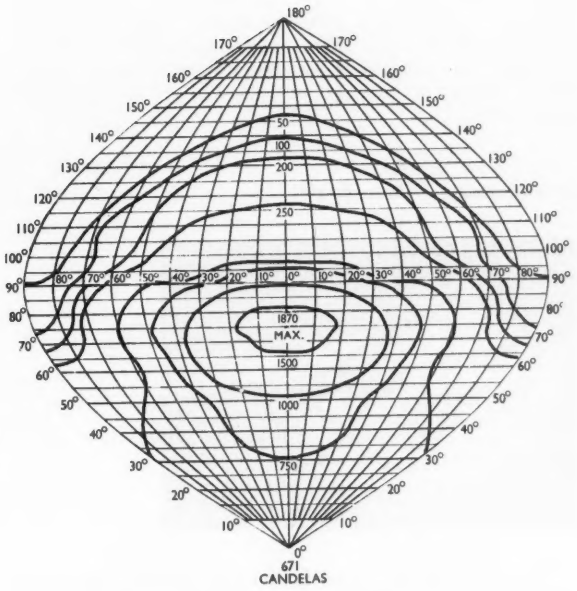
This fourth annual review includes lanterns introduced during the past twelve months. Though lanterns are classified under Group A or Group B lighting and are further sub-divided under types of light source, some lanterns may be used with various lamps or used for both main road and secondary road lighting.

Fluorescent lamp lanterns for Group A lighting

(1) G.E.C. Z 8284 "Two Eighty"

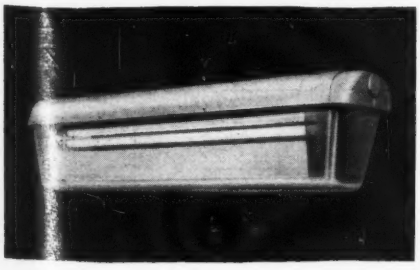


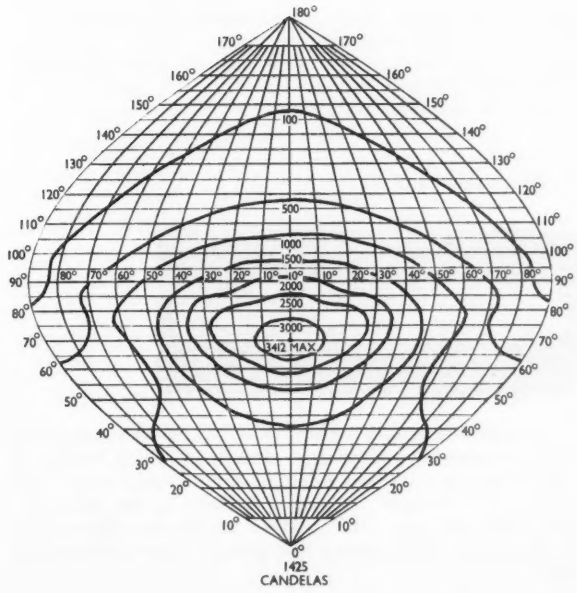
The lantern houses two 5-ft. 80-watt fluorescent lamps and is designed for side-entry mounting, the bracket being concealed within the body. A hinged top enables the control gear to be examined the right way up. The enclosure is of "Perspex" and incorporates sealed-in refractor plates.



(2) G.E.C. Z 8484 "Four Eighty"

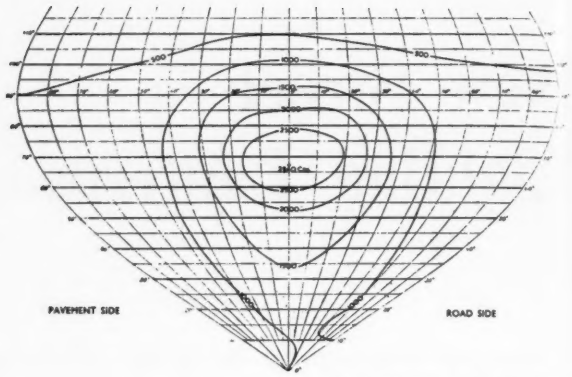
This lantern is similar in design to the "Two Eighty" but houses four 5-ft. 80-watt fluorescent lamps.





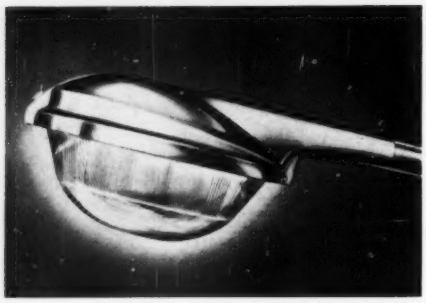
(3) ELECO "Silver Ray"

This lantern is designed for use with 250/400-watt mercury lamps or 250/400-watt mercury fluorescent (MBF/U) lamps. The body is made in one piece from die-cast aluminium alloy. The refractor bowl is held in position by a ring of the same alloy. The light-control system of refractors and polished anodised aluminium internal refractors is designed to take full advantage of the mercury fluorescent lamp.

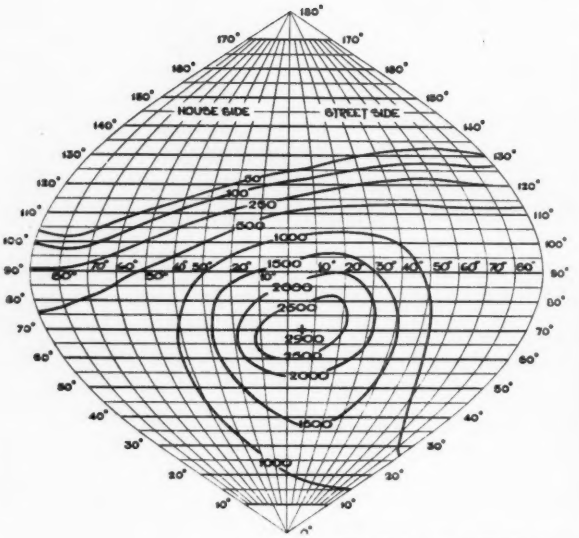


With 400-watt MBF/U lamp

(4) Holophane "Oval Bowl"

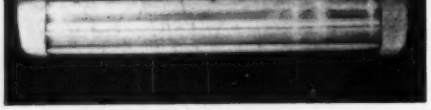


Designed for use with 250/400-watt mercury fluorescent lamps or mercury (MA/U) lamps. Used in the horizontal position the lantern gives a wide asymmetric distribution; when tilted at 15 deg., the distribution is non-axial asymmetric. The lantern body is die-cast in silicon aluminium alloy. The refractor is sealed in with felt gaskets and is retained in a hinged ring.

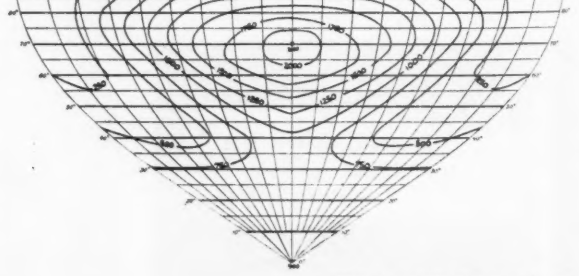


With 400-watt MBF/U lamp

(5) Phosware P.143

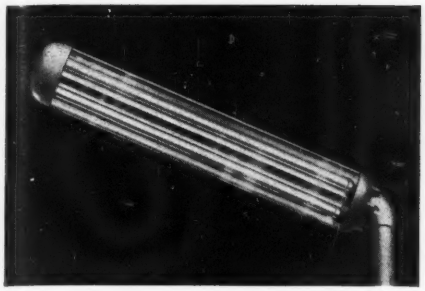


An enclosed lantern housing three 5-ft. 80-watt fluorescent lamps for side-entry mounting. The hood, which houses the control gear, is a one-piece casting of aluminium alloy. The bowl is of "Perspex," which is opalised at the ends with clear sides and base. The anodised aluminium reflectors are hinged to the body casting and give a wide medium-angle beam.

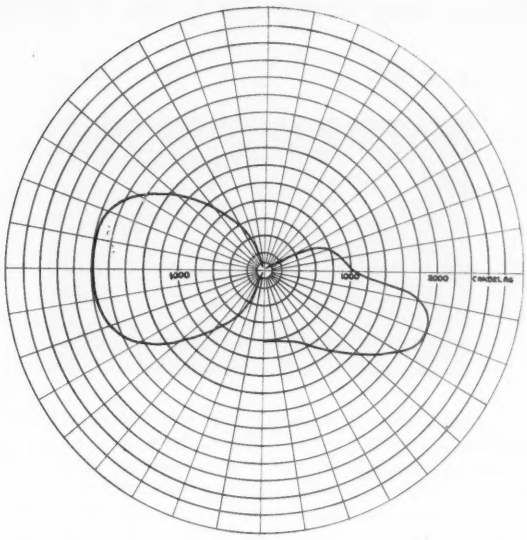


With two 5-ft. 80-watt lamps

(6) Revo C 15078

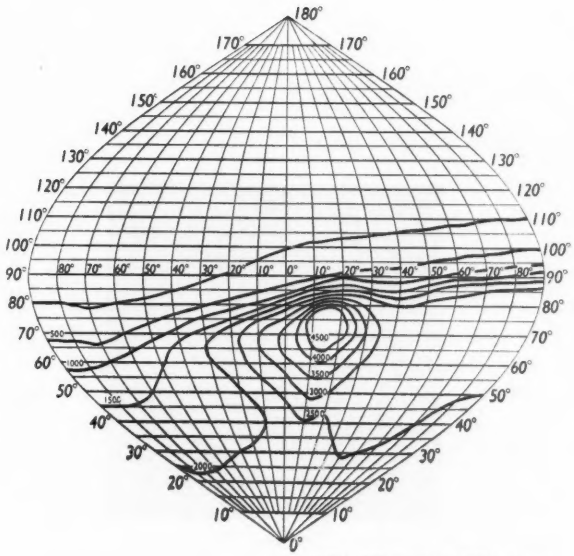


For use with three or four 5-ft. 80-watt fluorescent lamps. The body consists of a one-piece " Perspex " sleeve mounted on an aluminium end casting. Access to the interior and to the control gear is obtained by releasing the " Perspex " sleeve and sliding it outwards on its guide rails. The reflectors are of polished anodised aluminium. The lantern can be mounted horizontally or inclined at 15 deg.



(7) Atlas " Alpha Three "

Designed for use with 250/400-watt mercury fluorescent lamps this lantern may also be used with plain mercury lamps. The lantern consists of an end support, and a combined sealed lamp enclosure and light control system (called the " Opticell "). The end support includes a fixed lampholder and sealing cap and a support rod for the reflector cover assembly. The specular reflector is made from a magnesium-aluminium alloy and the front cover from a clear acrylic plastic. Other parts are of aluminium-silicon alloy or stainless steel. A small filter plug in the sealing cap allows the " Opticell " to breathe during heating and cooling whilst preventing the ingress of dirt.

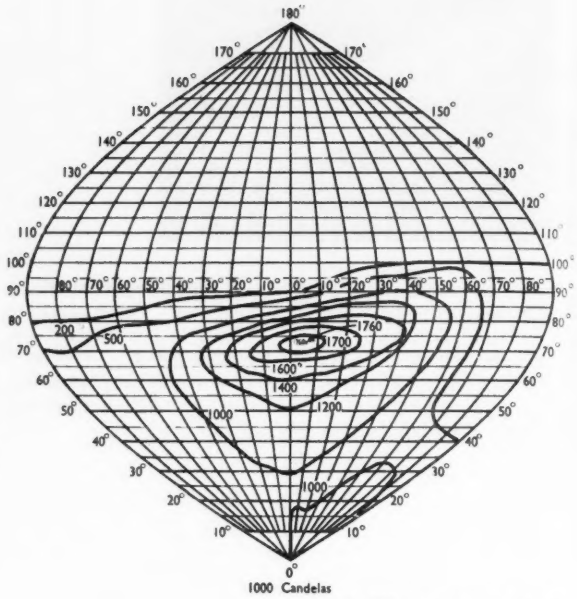


With 400-watt MBF/U lamp

Mercury lamp lanterns for Group A lighting

(8) G.E.C. Z 8430

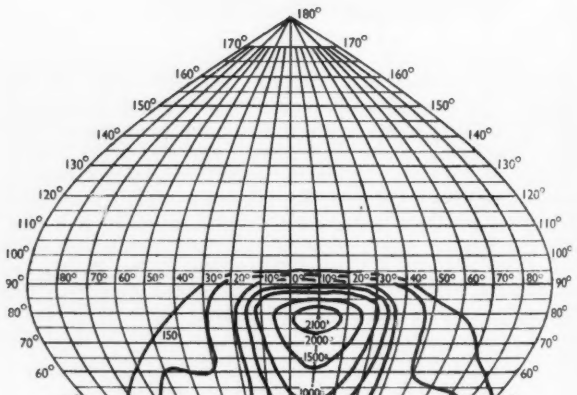
Designed for use with 250/400-watt mercury lamps or mercury fluorescent lamps. The body is a one-piece alloy die-casting arranged for side entry mounting. Light control is provided by a pressed prismatic refractor bowl of heat-resisting glass which is secured in a die-cast alloy ring supported on the main body casting by a hinge and stainless steel toggle catch.



With 250-watt mercury lamp

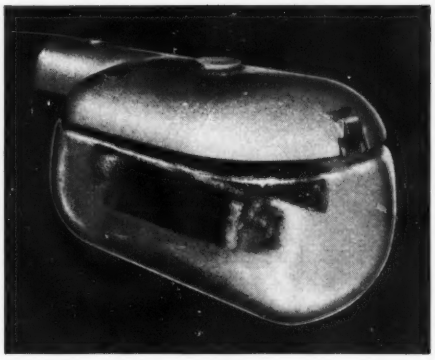
(9) G.E.C. Z 8413 "Uniway"

In addition to main road lighting this lantern may be used to spotlight special positions such as traffic control points, and entrances, and for the lighting of yards, loading bays, sidings, etc. The lantern houses an 80/125-watt mercury or mercury fluorescent lamp or a 200/300-watt tungsten lamp or a 45-watt sodium lamp. It is arranged for side entry mounting. The optical system consists of a silvered mirror of special contour which is fixed in the body, and a front diffusing glass which produces the required width of beam.

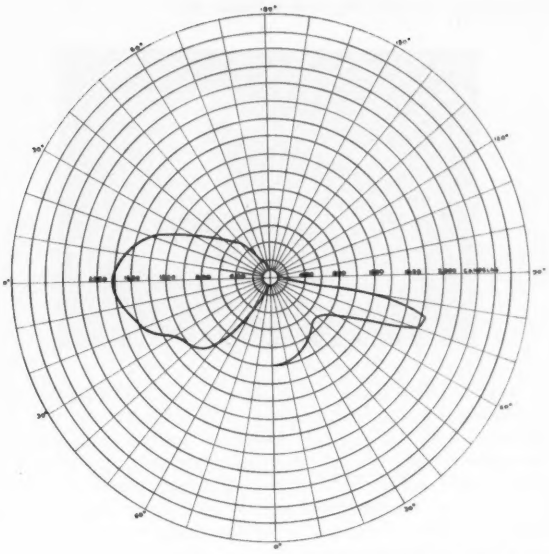


With 80-watt mercury lamp

(10) Revo C 15072



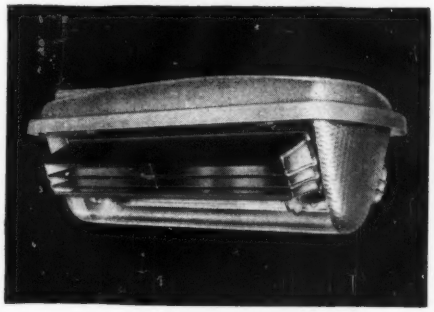
This is a totally enclosed lantern designed for use with 250-400-watt mercury or mercury fluorescent lamps burning horizontally. The cast-aluminium canopy supports the reflector system which is made of polished anodised aluminium and gives a medium angle beam distribution. The enclosing bowl is made of heat-resisting glass and is hinged to the canopy and retained by a snap action catch.



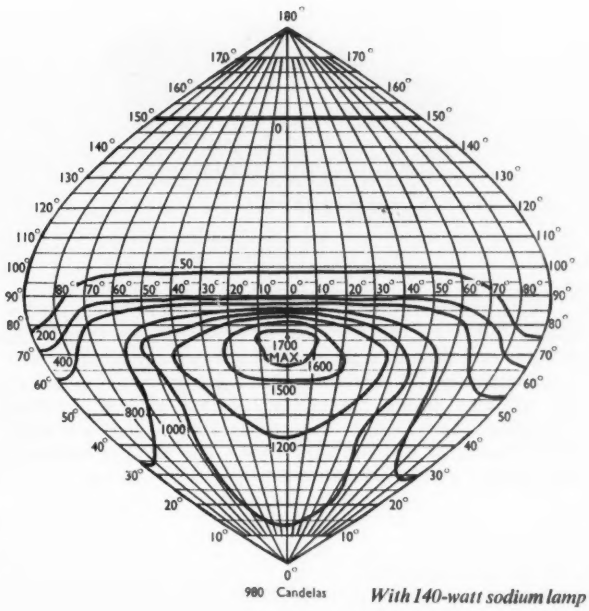
With 250-watt mercury lamp

Sodium lamp lanterns for Group A lighting

(11) G.E.C. Z 9452/3 A and Z 9462/3 A

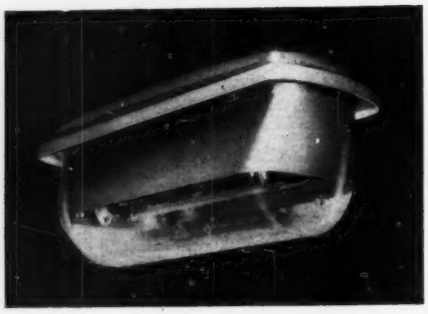


Designed for use in the vicinity of airfields with a 140-watt integral sodium lamp. The lantern body is a one-piece die-casting and is available for either side or top entry mounting. Light control is by means of " Perspex " refractor plates bonded to the inside of a " Perspex " bowl. Screening from the air is achieved by a moulded " Perspex " louvred box bonded on each side of the bowl over the refractor plates. A version of the lantern is available in which the lamp operating gear is housed in the body.

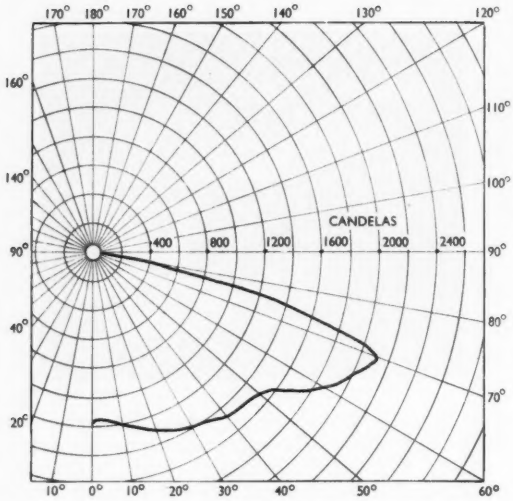


With 140-watt sodium lamp

(12) G.E.C. Z 9452/3C and Z 9462/3C

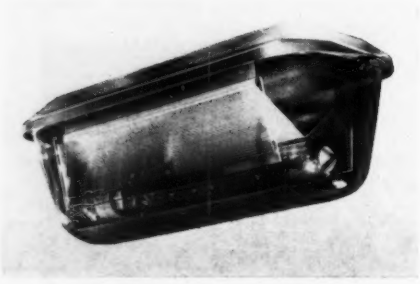


This lantern gives a cut-off distribution with no light emitted above the horizontal and is intended for use at a spacing of 95-100 ft. with 140-watt integral sodium lamp. The lantern body is a one-piece alloy die-casting and is available for side or top entry mounting. Light control is provided by two glass mirrors fixed one to each inner side of a one-piece moulded "Perspex" bowl the upper position of which is silvered with the lower half clear. A version of the lantern housing the lamp operating gear is available.

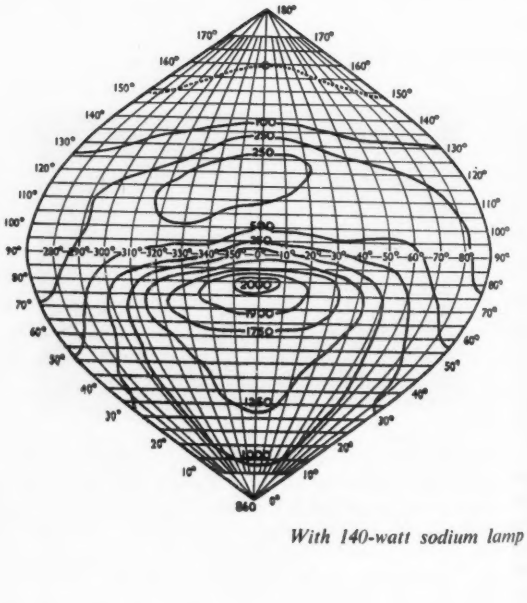


With 140-watt sodium lamp

(13) Siemens Edison Swan "Orson A"

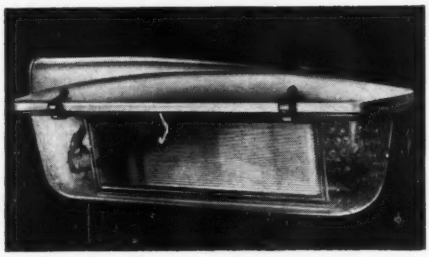


This lantern is designed for use with 85/140-watt sodium lamps and is suitable for side- or top-entry mounting. The body is of a die-cast light alloy of shallow construction with accommodation for control gear. Light control is by means of refractor plates hermetically sealed to the moulded "Perspex" bowl, which is lightly etched. There is a white stove-enamelled overlamp reflector. The bowl is hinged at the column end of the lantern.

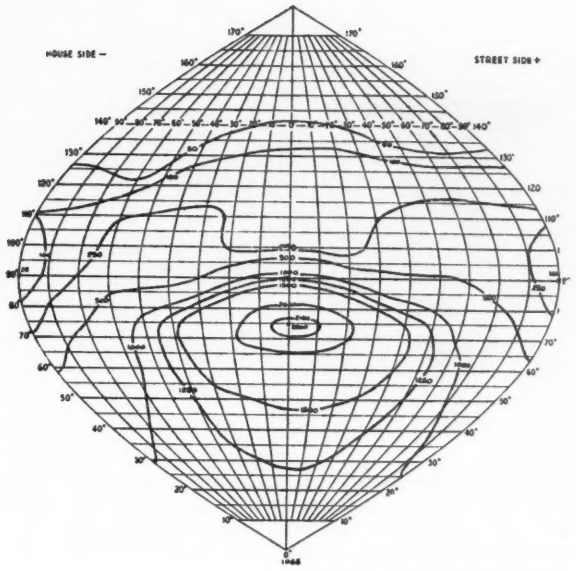


With 140-watt sodium lamp

(14) Wardle "Atholl" Mk. III



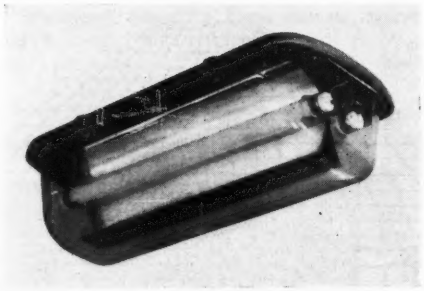
85/140-watt sodium lamps, this lantern has a streamlined silicon aluminium body casting which is available for top or side entry. A cast silicon aluminium bowl supporting ring ensures that the lantern is dust and moisture proof. The bowl is of moulded "Perspex" with refractor plates of the same material cemented on the inside. The standard finish is stove-enamelled aluminium inside and outside; the interior reflector may be of white PVC, enamelled steel or aluminium.



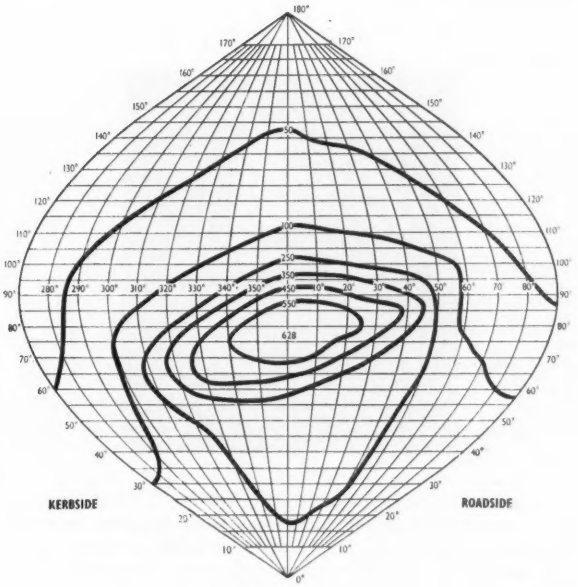
With 140-watt sodium lamp

Fluorescent lamp lanterns for Group B lighting

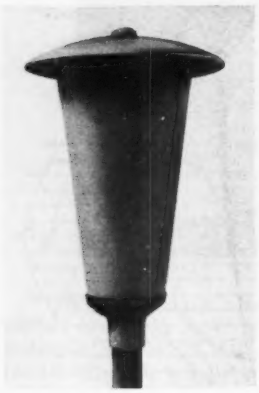
(15) A.E.I. "Residential" Mk. II

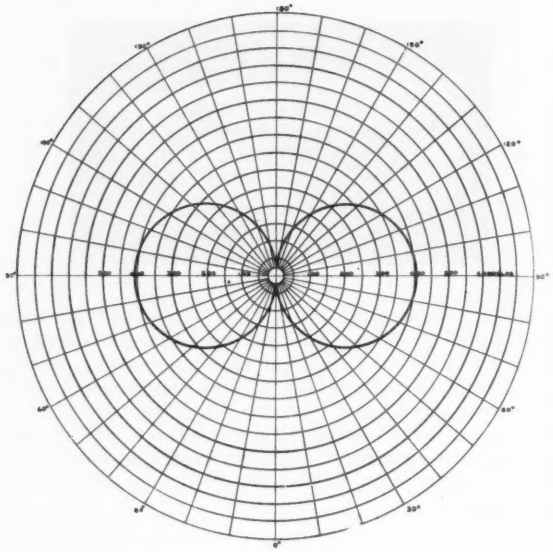


This lantern is for use with two 2-ft. 40-watt fluorescent lamps. It is available for side-entry mounting only. Lamp gear, earth terminal, cable clamp and terminal block are housed on a tray attached to the canopy. Light control is by means of anodised aluminium reflectors which also carry the lamp clips and push-on bi-pin lampholders.



(16) Revo C 15116

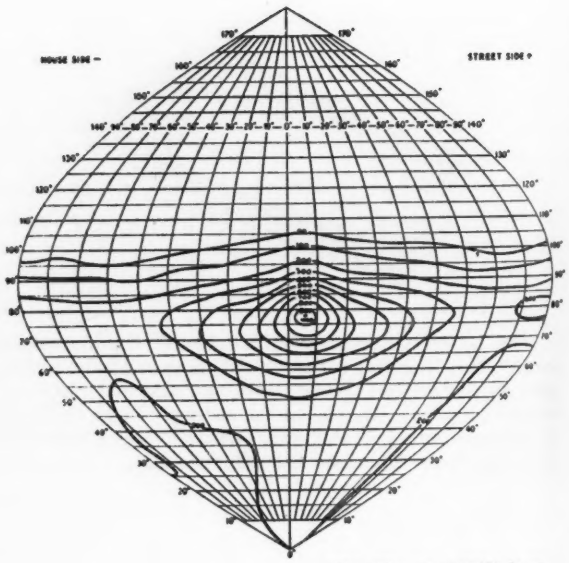




A vertical fluorescent lamp lantern consisting of a truncated cone of opal " Perspex " with a canopy of spun sheet steel and a cast-iron base with integral spigot cap. The lantern will house two or four 2-ft. fluorescent lamps and control gear.

Mercury lamp lanterns for Group B lighting

(17) Wardle " Avon "

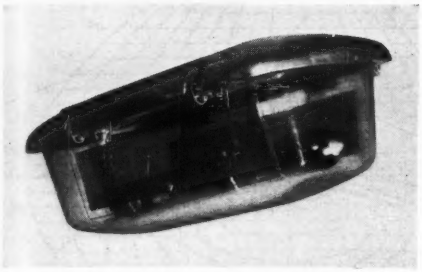


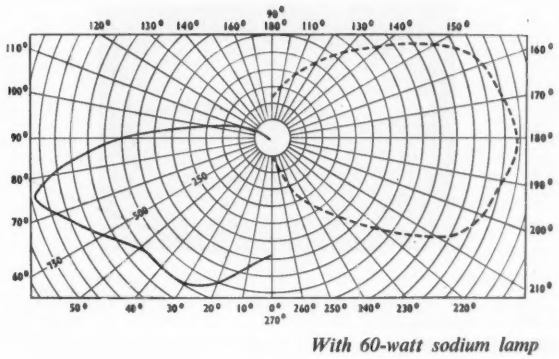
With 80-watt MB/U lamp

This lantern is designed for use with 80/125-watt mercury or mercury fluorescent lamps or with tungsten filament lamps up to 200 watt. The body is available in cast-iron or cast-aluminium and for top- or side-entry mounting. Two types of bowl refractors are available or a dioptric dome refractor with glass or " Perspex " outer globe may be used for optical control. By means of a screw adjustment the lampholder may be positioned according to the type of lamp used.

Sodium lamp lanterns for Group B lighting

(18) A.E.I. "Amber" Mk. IV

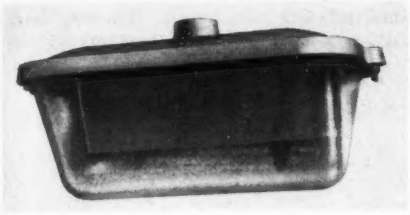


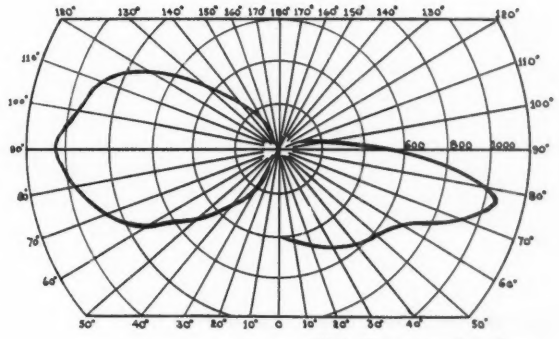


With 60-watt sodium lamp

This lantern is available in two sizes, for Group A or Group B lighting. The former is for side-entry mounting; the latter for top-entry mounting. The lantern consists of die-cast silicon aluminium alloy canopy with a lightly etched clear "Perspex" enclosing bowl. Light control is by means of sealed "Perspex" refractor plates.

(19) Ford AC712

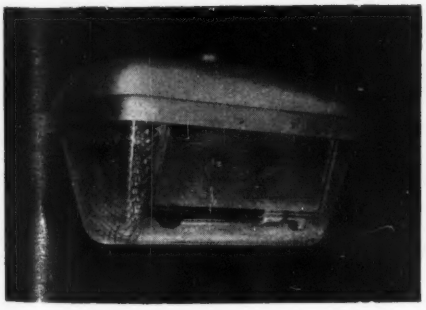


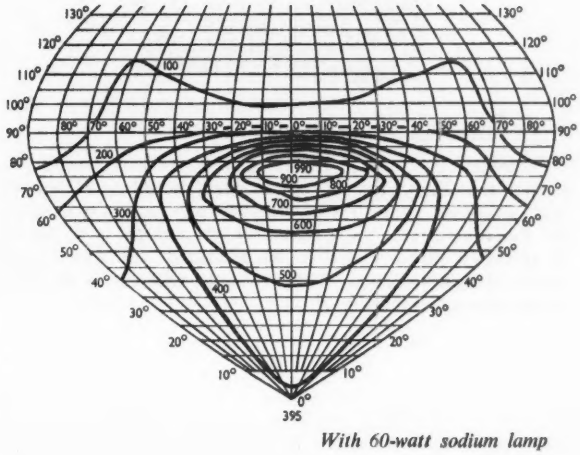


With 60-watt sodium lamp

This lantern is for use with 45/50-watt sodium lamps and has been designed to provide a cheap and efficient lantern for side-road lighting. It comprises a one-piece cast silicon aluminium body arranged for top or side entry mounting with a "Perspex" enclosing bowl secured by means of a hinged aluminium frame. Light control is by means of "Perspex" refractor plates cemented to the inside of the bowl.

(20) G.E.C. Z 9448/9 and Z 9458/9

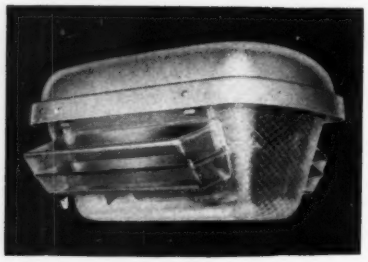




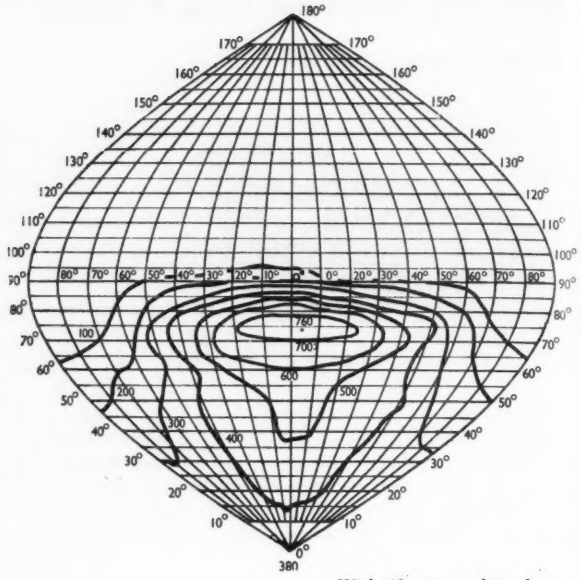
With 60-watt sodium lamp

This lantern is intended for use with 45/60-watt integral sodium lamps and is suitable for side or top entry mounting. The body is a one-piece alloy die-casting and a version is available which houses the lamp-operating gear. Light control is by injection moulded refractor plates recessed into the injection-moulded bowl.

(21) G.E.C. Z 9448/9A and Z 9458/9A

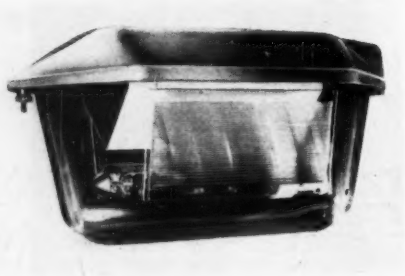


This lantern is designed for use in the vicinity of airfields at a spacing of 100-120 ft. It houses a 45- or 60-watt integral sodium lamp. The lantern body is a one-piece diecasting; a version is available which houses the lamp gear. Light control is by two injection moulded refractor plates recessed into each side of the moulded bowl. Screening from the air is achieved by a moulded " Perspex " louvred box bonded on each side of the bowl over the refractor plates.

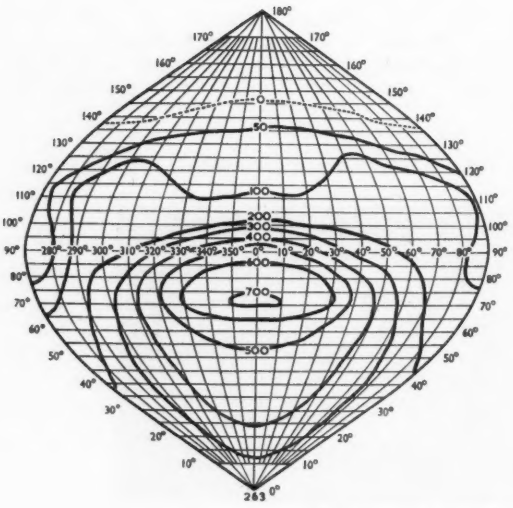


With 60-watt sodium lamp

(22) Siemens Edison Swan " Orson B "



Intended for use with 45/60-watt sodium lamps, the lantern is available for side or top entry mounting. The body is of a die-cast light alloy of shallow construction with space for the control gear as required. Light control is by means of refractor plates sealed to the moulded " Perspex " bowl which is lightly etched. The overlamp reflector is of white stove enamelled sheet steel.

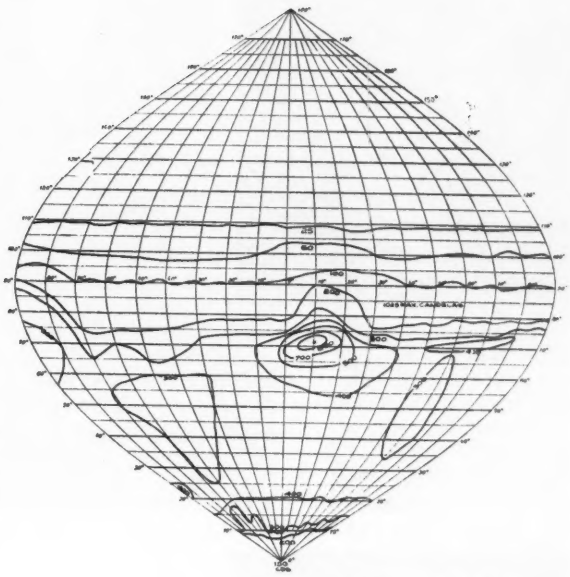


With 60-watt sodium lamp

Tungsten lamp lanterns for Group B lighting

(23) Falks " Beaufort 25 "

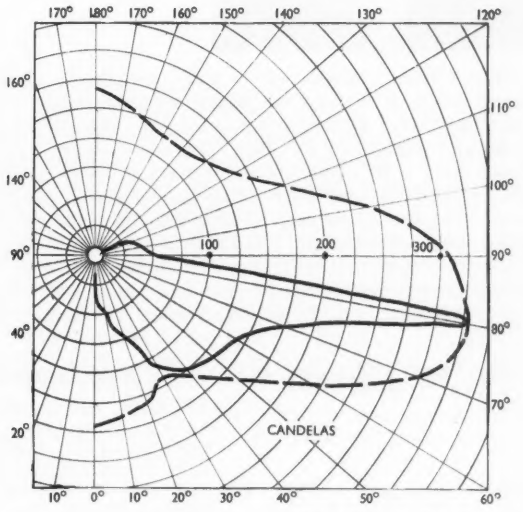
This is a post-top lantern for use with 150/200 tungsten lamps on 80/125-watt mercury or mercury fluorescent lamps. The aluminium hood is available in blue-grey, red or green. The four aluminium supporting tubes and the spigot cap are stove enamelled. Dome refractors may be used to give axial, non-axial or symmetrical distribution; the refractor may be enclosed by a clear " Perspex " cover.



With 200-watt G.L.S. lamp

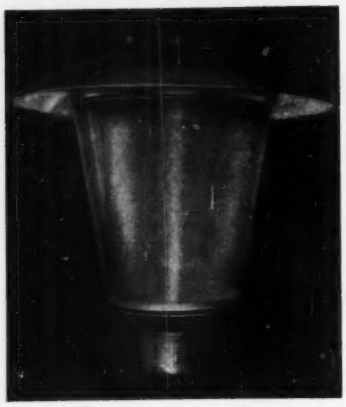
(24) G.E.C. Z5650

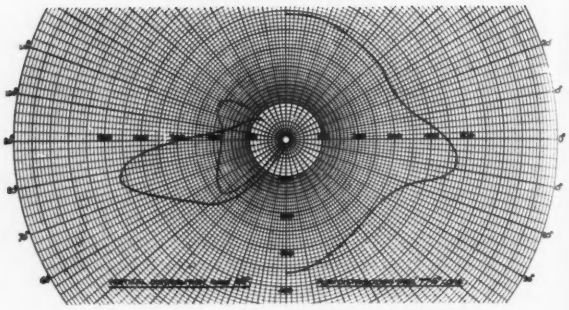
This post-top lantern may be used with 60/200-watt tungsten lamps, 80/125-watt mercury or mercury fluorescent lamps, or with 45/60-watt sodium lamps. The body consists of a truncated cone of " Perspex " held at the bottom in a die-cast alloy spigot cap and at the top in a spun light alloy canopy. Light control is by a prismatic glass dome refractor.



With 100-watt G.L.S. lamp

(25) Phosware P107

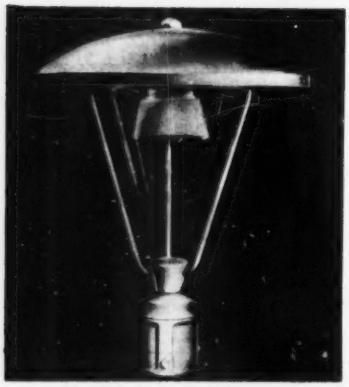


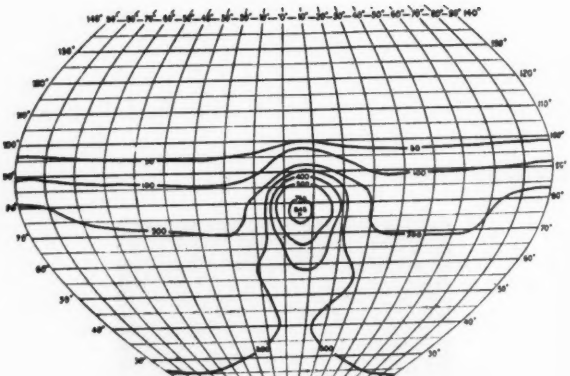


With 150-watt pearl lamp

This post-top lantern consists of a cast aluminium alloy spigot cap supporting a cone of pin-spot "Perspex" surmounted by a spun metal canopy. The cone and canopy are supported by two internal tubular rods. Light control is by means of a two-way refractor. The lantern is suitable for use with tungsten lamps up to 200-watt, 80/125-watt mercury fluorescent lamps or 45/60-watt sodium lamps.

(26) Wardle "Post Top"





With 150-watt GLS lamp

This lantern consists of a spun aluminium canopy beneath which is a flat stove enamelled white reflector of spun aluminium. These are supported from the cast silicon aluminium spigot cap by three aluminium tubes. Light control may be by a dioptric dome refractor with a "Perspex" globe or by the Wardle "Dielikon" plastic band refractor. An opal globe may be used without refractor. The lantern will accommodate 100/200-watt tungsten lamps or 80/125-watt mercury or mercury fluorescent lamps. A focusing device for the various types of lamps which may be used is fitted. A wall mounting version is available.

Names and addresses of firms whose lanterns are described on pages 345—356

AEI Lamp and Lighting Co. Ltd., 44, Fitzroy Road, London, N.W.1.
Atlas Lighting Ltd., 233, Shaftesbury Avenue, London, W.C.2.
Engineering and Lighting Equipment Co. Ltd., Sphere Works, St. Albans, Herts.
Falk, Stadelmann and Co. Ltd., 91, Farringdon Road, London, E.C.1.
A. C. Ford Ltd., Pear Tree Lane, Dudley, Worcs.
General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2.
Holophane Ltd., Elverton Street, Westminster, London, S.W.1.
Phosco Ltd., Hoe Lane, Ware, Herts.
Revo Electric Co. Ltd., Tipton, Staffs.
Siemens Edison Swan Ltd., 38-39, Upper Thames Street, London, E.C.4.
Wardle Engineering Co. Ltd., Old Trafford, Manchester, 16.

Place de l'Hôtel de Ville, Paris, with (right) one of the old lanterns which have been converted to use electric lamps.

Street Lighting in France

A review of some recent installations

By L. Gaymard

THOSE who have travelled in France will know that the general standard of street lighting there lags somewhat behind that in Britain. There are a number of reasons for this. First there was the tremendous amount of work and expense involved in reconstruction and more recently the high expenditure on housing. Another reason, and one which is frequently overlooked, is the complete independence which local authorities have in planning their public lighting; it is largely because of this that so many towns are badly lit and the main highways at night present an incoherent succession of sections which may be well lit, indifferently lit, or entirely unlit; in some cases they are so badly lit as to be a positive danger. The possibility of financial assistance from central Government funds for the lighting of such roads (as in Britain) is at last receiving some consideration.

In spite of these handicaps, however, progress is being made, not only in Paris and other large cities, but also in the provinces.

The author is Chief Engineer Street Lighting, Electricité de France.

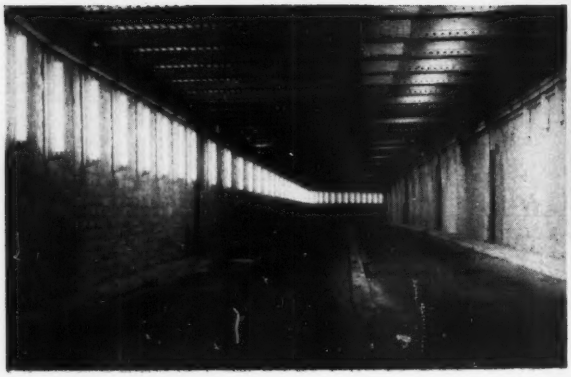
Paris

A most spectacular accomplishment was, of course, the installation on the Champs-Elysées in 1956, a description of which was given in the September, 1956, issue of *Light and Lighting*.

Several other major roads in Paris have been relit, including the Avenue de l'Opéra, where the carriageway has recently been widened to accommodate two additional traffic lanes. Our respect for aesthetics and tradition demanded that the existing cast-iron columns be retained; twin arm brackets were added and each lantern is equipped with a 500-watt tungsten lamp. Similar lamps in "Infranor" lanterns are used to good effect in the Boulevard de l'Hôpital, which carries very heavy traffic.

Tungsten lamps are also used in conjunction with colour-corrected mercury lamps. In addition to the Champs-Elysées, the Place de l'Hôtel de Ville, which is 190 yards long by 90 yards wide, is lit in this way. Each of eight 40-ft. columns carries four lanterns housing one 250-watt colour-corrected mercury lamp and one 500-

Avenue de l'Opéra, Paris, with (left) the tungsten lamp lanterns used.

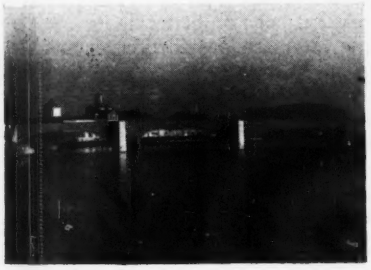


The Alexandre III tunnel in Paris lit by vertical fluorescent lamps.

Below right, the Tunnel de l'Alma, Paris, lit by fluorescent and sodium lamps; below, the interior of one of the luminaires showing the two types of lamp.

Quai des Tuileries, Paris, lit from one side of the road only.

A wall bracket fitting at Vincennes.



The new bridge over the Yonne at Montereau, which is lit by fluorescent lamps in the parapets.

watt tungsten lamp, resulting in a high general illumination (1-4 lm/ft^2), uniform road luminance and good colour rendering. The old columns and lanterns along the front of the Hôtel de Ville have been retained, but the former gas mantles have been replaced by tungsten lamps.

The views of the Paris municipality and of Parisians themselves on colour rendering in streets must by now be fairly well known. It is because of these strong views that both mercury lamps and colour-corrected lamps are excluded from the central districts and tungsten lamps are used in the same lantern with colour-corrected lamps. Though this method is effective as far as colour rendering is concerned, it is unfortunately expensive, not only in initial cost but also in maintenance; the difference in the average life of the two types of lamps (1,800 hours for under-run tungsten lamps and 3,000 hours for colour-corrected) necessitates frequent inspection for relamping. Good colour is also achieved by using fluorescent lamps and a programme of relighting using such lamps is now being carried out. Two roads which have been relit are the Boulevard Montparnasse (which has been widened by 20 ft.) and the Franklin Roosevelt Avenue.

One or two installations using fluorescent lamp lanterns mounted parallel to the road have recently come into operation. The normal arrangement of lanterns transverse to the road results in good lighting at night, but, unless the lanterns and brackets can be concealed in trees, presents a daytime appearance which is not welcomed in Paris. This is particularly so in roads which border on buildings of interest or architectural merit. For this reason experiments were carried out with lanterns mounted

Centrally suspended fluorescent lamps in Marseilles.

Vertical fluorescent lanterns on the Côte d'Azur.

Mohamed V Boulevard in Casablanca lit by vertical fluorescent bracket fittings.

parallel to the road on the Avenue de la Porte d'Orleans. The results were not very satisfactory, the road brightness being very patchy. With subsequent installations along the Quai du Louvre and the Quai des Tuileries the lanterns were mounted at closer spacing (65-70 ft.) and much better results were obtained. Once again, however, the cost of such installations is more than that of the conventional type.

The importance which we in Paris place on aesthetics has meant the redesign of the interiors of some of our old lanterns to house modern and more effective lamps and reflectors. A new circular reflector made by Girardin may be used with either tungsten or colour-corrected mercury lamps and has a focusing device to give a symmetric or asymmetric distribution.

New road tunnels opened during the last year or so include the Tunnel de l'Alma, which is 160 yards long and consists of two unidirectional carriageways separated from one another by a clerestory wall. Set into the near side wall (the right in France) are longitudinal lanterns each of which houses one 5 ft. fluorescent lamp and two 85-watt sodium lamps. Near the entrances additional lighting is provided by 85-watt sodium lamp lanterns mounted at a lower level which help to reveal vehicles by silhouette against the bright background thus achieved. The level of illumination in the tunnel is automatically varied according to whether it is a sunny or dull day or night. The Porte de Saint-Ouen underpass is lit in a similar way. The Alexandre III tunnel is lit by vertical fluorescent lamps in " Perspex " troughs mounted on the outside of the curve.

Though the emphasis has been on better lighting in the centre of Paris, lighting has been provided on a number of trunk roads leading out of the city. An example is the Grande Rue de Sevres, which is lit with 250-watt colour-corrected lamps in Holophane lanterns. Vertical fluorescent lamps in post-top lanterns or on wall brackets are also used for this type of road.

A very beautiful and efficient installation near Paris is that on the Montereau Bridge on the Yonne. This is a new bridge with very elegant lines which would be spoiled by the erection of columns. Following the successful installations in Belgium it was decided to light this bridge with fluorescent lamps in the parapets; the resulting revealing power is very good due to a large extent to the appreciable vertical illumination. It is unfortunate that the cost of lighting bridges in this way is higher than that of conventional methods.

The Provinces

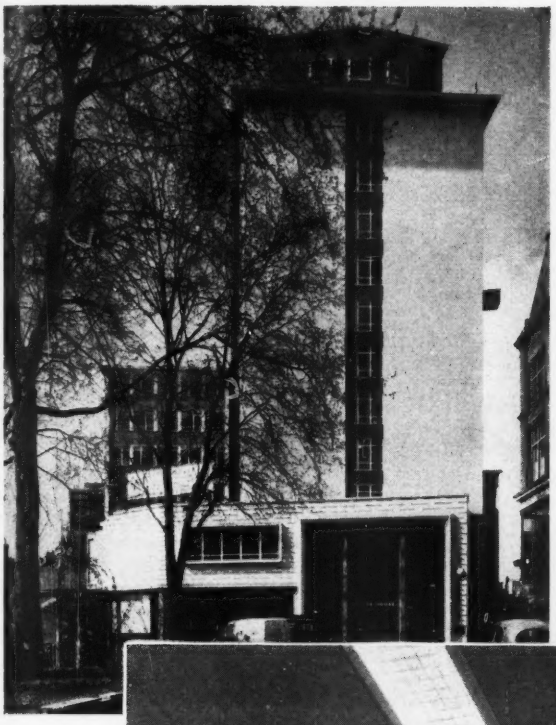
Lyon, the second largest city outside Paris, has adopted a long-term programme of relighting, and the first results are of a high standard. Colour-corrected mercury lamps (250-watt) have been used in the Rue de la République, the Place Bellecour and on the Lafayette Bridge.

At Tours colour-corrected mercury lamps have been effectively used, particularly along the quays and along the four-mile-long north-south through-road which includes the Wilson Bridge over the Loire. This bridge is 700 yards long and had already been spoiled by the erection of concrete poles carrying trolley-bus wires. It was obviously impossible aesthetically to add to the number of poles, which are spaced at 200 ft., so special iron brackets were fitted to the existing ones to give a further

(Continued on page 366)

COURTNEY, POPE

THE **LIGHTING** SPECIALISTS



CALTEX HOUSE, occupied jointly by Messrs. Caltex Services Ltd. and Messrs. Albright & Wilson Ltd., is fitted throughout with the Burgess Metal Suspended Modular Ceiling utilizing some 2500 specially designed FX 277 lighting fittings. The FX 277 clips onto the "T" framework of the special ceiling, unaided by further suspension, and providing complete flexibility of design should subsequent alterations be made.

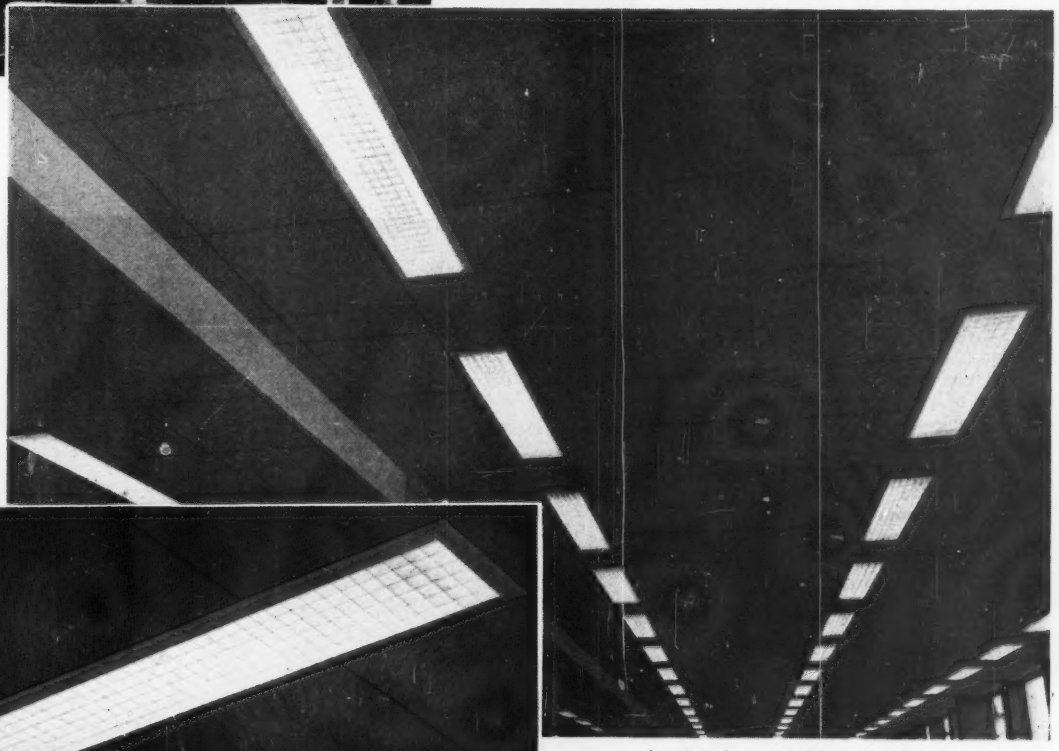
The Caltex House scheme is typical of many similar large office installations designed, by the Courtney, Pope Lighting Service, involving complete co-operation in the solution of lighting problems and the installation of special lighting fittings.

CALTEX HOUSE

General Contractor & Electrical Consultants:
Sir Robert McAlpine & Sons Ltd.

Electrical Contractors:
Edmundson Construction Co. Ltd.

Architects:
E. A. Stone, Toms & Partners & R. H. Andrews-Jones & Son



Interior of general office showing ceiling and lighting installations.

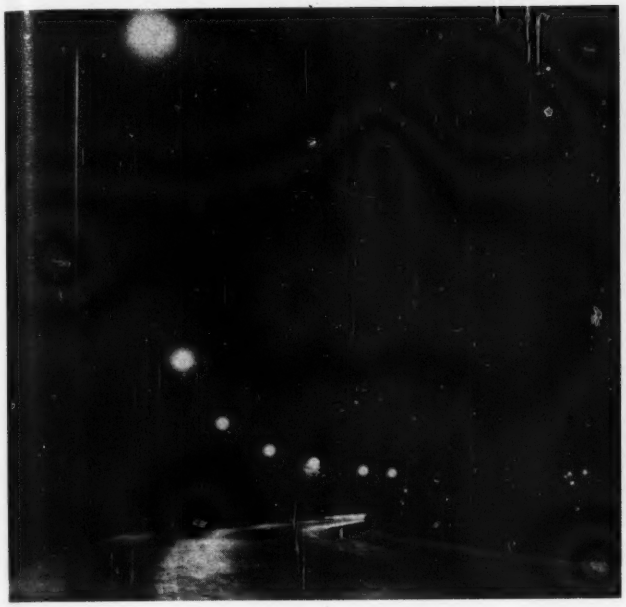
(Inset) FX 277 Fitting.

COURTNEY, POPE (ELECTRICAL) LTD., AMHURST PARK WORKS, TOTTENHAM, LONDON N.15. (STAMFORD HILL 1270)

Recent Street Lighting Installations

The relighting of several important roads in the West End of London has been carried out by the City of Westminster and fluorescent lighting is now installed on a number of them. The upper picture shows G.E.C. "Four-Eighty" lanterns each housing four 5-ft. 80-watt warm white fluorescent lamps in Regent Street. The lanterns are opposite mounted at 120-ft. spacing on 25-ft. steel columns. Additional lighting is provided on existing island refuges by vertical lanterns each housing four 2-ft. 40-watt lamps on 15-ft. steel columns.

The lower picture is of Revo "Soletern" lanterns in Piccadilly each lantern housing four 5-ft. 80-watt fluorescent lamps. Revo fluorescent lamp lanterns are also in use in a number of other roads and tungsten filament lamp lanterns similar to those in Parliament Square have been installed in Pall Mall and St. James's Street.

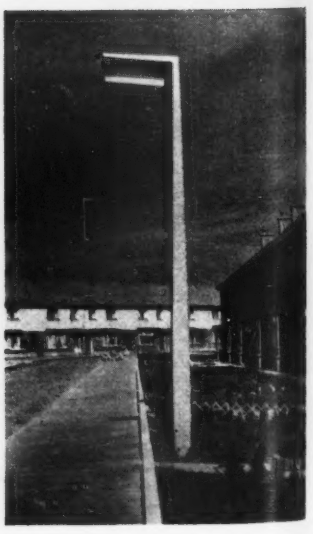


The A 19 is a very busy trunk road running through Stockton-on-Tees. The lighting scheme for this road includes 101 Atlas "Alpha One" 140-watt sodium lamp lanterns mounted on Stanton 8F pre-stressed concrete columns spaced at an average of 120 ft. A further 70 lighting points will be brought into use shortly and the scheme is to be extended to bus routes where similar lanterns but using 85-watt sodium lamps will be used.

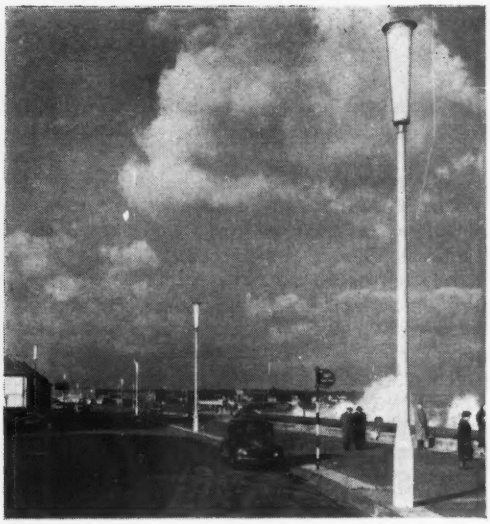
This photograph shows part of the sodium lamp installation at Watford Way, Hendon. The lanterns are Revo "Silvergold" using 140-watt lamps on Revo "Scopas" concrete columns. Over 4,000 concrete columns and lanterns have been installed in the Borough of Hendon for the lighting of main and side roads.

The first stage of the Cromwell Road extension between Hammersmith Bridge Road and the LCC-Middlesex boundary, a distance of nearly one mile, has been lit by 77 AEI "Sapphire" aero-screened lanterns, housing 400-watt mercury lamps. The lanterns are mounted on 62 Mazda "Trifoil" 25 ft. columns, 15 of which are on the central reservation and have 6 ft. double arms, the remainder on the outside of the carriageway having 2 ft. single arms.

Stamford is well-known to those travelling north by road from London who will appreciate that the narrow streets and limited pavement space rule out the use of columns. Horizontally wall-mounted Revo lanterns have been used. Each lantern houses two 5 ft. 80-watt fluorescent lamps; the spacing is 50-55 ft. and the mounting height 20-25 ft.



These photographs show two typical examples of modern side street lighting. That on the left is a GEC "Two-Forty" fluorescent lantern on a "Brevis" concrete column at Kew where over 1,000 such units are to be installed in a three-year programme. That on the right shows an Atlas "Beta Two" fluorescent lamp lantern on a Stanton 9C column on a housing estate in Belfast where over 400 similar units have been installed.



The above pictures show a recent installation of vertical fluorescent lamp lanterns on the sea-front at Seaburn, Co. Durham, carried out by the Sunderland County Borough Council. The lanterns were supplied by the AEI Lamp and Lighting Co. Ltd. and are mounted on "Alpha" spun concrete columns at a spacing of 140/145 ft. Each lantern houses four 5-ft. 80-watt fluorescent lamps.

The photographs below show an installation of Siemens-Ediswan "Kuwait" lanterns at Banbridge, Northern Ireland. The main roads in the town are lit by lanterns housing two 5-ft. 80-watt fluorescent lamps. In the more important side roads Group B lighting is provided by the smaller version of the "Kuwait" lantern which houses two 2-ft. 40-watt lamps.

Street Lighting in France

(Continued from page 360)

7 ft. in height and an overhang of 4 ft. By this means reasonably uniform luminance was obtained in spite of the long spacing.

Modernisation of its street lighting is also being carried out in Marseilles. In addition to numerous installations of colour-corrected mercury lamps, a system employing fluorescent lamps (two, three or four) suspended transversely across the street is used. Though the system is one which, because of its obtrusiveness, would not be considered in Paris, it must be admitted that it does produce very large bright patches on the road surface with excellent revealing power.

On the Côte d'Azur the elegant vacationers prefer the warm light and acceptable colour rendering of tungsten lamps; the well-known Promenade des Anglais at Nice is lit by 500- or 1,000-watt tungsten lamps in large prismatic bowls. There are a number of installations along this coast of post-top fluorescent lanterns using 2-ft. lamps.

Correspondence

Foot-candle

Dear Sir,—Recent "Postscripts" have invited readers to suggest a name for our unit of illumination, but have at the same time poured such Olympian scorn on a well-known and commonly used term that some redress of balance seems desirable, lest the disease of Lumerwritis prove wholly catching.

The essential function of a name is *identification*, and its very requirement of reasonable brevity precludes it from attempting to define. Many terms such as "Lambert" and "Nit" are brief but not, I believe, explanatory, and so ready identification should perhaps be the aim of this quest.

If we are not too lacking in accommodation why not use "Foot-candle" as the name of the unit now defined by the condition of one Lumen per Square Foot? At least it would avoid the risk, inherent in a very recent suggestion, of being indistinguishable when spoken from its metric equivalent: the difference would be palpable even to one who had failed his "Eleven-Plux" examination!

London. CANDLESTICKER.

Dear Sir,—As one result of an enforced period of inactivity, I have been reading a book in which there appears a unit of fluid flow quite new to me, viz., the *cusec*, standing for one cubic foot per second.

It at once occurred to me that the principle of construction of this quite convenient and euphonious word might, perhaps, be used to derive from the lumen per square foot the not inconvenient name *luft*.

Whether the *u* should be pronounced as in the first or last syllable of "bulrush" is, I feel, a secondary consideration.

London. JOHN W. T. WALSH.

Trade Notes

It is announced that the work of the Lighting Service Bureau is to be continued and expanded under the auspices of a new and more representative body the Founder Members of which are the British Electrical Development Association, the Electric Lamp Industry Council and the Lighting Equipment Development Council.

The co-operation of the electricity supply industry and manufacturers of lighting equipment and of electric lamps in bringing to the attention of architects, consultants, doctors, government departments, industrialists, shopkeepers and engineers the most efficient means of using electricity for lighting and of getting the best service from electric lamps and equipment will benefit everyone. The aim will be "to promote the full and proper use of light in the service of the community."

The Lighting Equipment Development Council is a new organisation formed to represent the manufacturers of electric lighting equipment on the reorganised Lighting Service Bureau, to share in the direction of its policy and to support its work with particular reference to electric lighting equipment. The objects of this new organisation are directed solely towards market development and the provision of technical information and advice for users, traders and professional consultants in the use of electric lighting equipment; it does not concern iteslf at all with prices or discounts. The first members are:—

AEI Lamp & Lighting Co. Ltd.
Allom Brothers Ltd.
Atlas Lighting Ltd.
Benjamin Electric Ltd
Best & Lloyd Ltd.
Courtney Pope (Elecl.) Ltd.
Crompton Parkinson Ltd.
Cryselco Ltd.
Dernier & Hamlyn Ltd.
Ekco-Ensign Electric Ltd.
Falk Stadelmann & Co. Ltd
H. W. Field & Son Ltd.
General Electric Co. Ltd
Hailwood & Ackroyd Ltd
Harris & Sheldon (Elecl.) Ltd.
Herman Smith Smithlite Ltd.
Holophane Ltd.
Inductive Appliances Ltd.
Linolite Ltd.
Wm. McGeoch & Co. Ltd.
Merchant Adventurers Ltd.
Nita Miller.

W. J. Parry & Co. (Nottingham) Ltd.
Philips Electrical Ltd.
Revo Electric Co. Ltd.
Rowlands Electrical Accessories Ltd.
Simplex Electric Co. Ltd.
Siemens Edison Swan Ltd.
F. W. Thorpe Ltd.
Troughton & Young (Lighting) Ltd.
Walsall Conduits Ltd.

The secretary of the new Council is Mr. J. H. Campion, Lighting Equipment Development Council, 103, Kingsway, London, W.C.2.

Trade Literature

AEI LAMP AND LIGHTING CO. LTD., Rugby, Warwickshire.—Catalogue AL154 giving well illustrated details and prices of the company's lamps, including general lighting service, decorative, infra-red, reflector, projector and photographic, fluorescent and electric discharge, car bulbs, flashlight, transport, aircraft, minors, etc.

J. A. CRABTREE AND CO. LTD., Lincoln Works, Walsall, Staffs.—Current price list of wiring accessories and control gear.

FALK, STADELMANN AND CO. LTD., 91, Farringdon Road, London, E.C.1.—Brochure giving full details and prices of the "Striplock" technique for mounting switches and sockets.

LINOLITE LTD., 118, Baker Street, London, W.1.—Information Sheet 3, illustrating the new "SA" metal fitting, and Sheet 4, introducing a range of components designed to give adaptability to a variety of types of lighting installations.

SIEMENS EDISON SWAN LTD., 38-39 Upper Thames Street, London, E.C.4.—Separate brochures giving details and prices as well as installations of the following street lighting lanterns:—The Court (Group A), The Kuwait (Group A), The Orson (Group A and B), The Crawley (Group B), The Carpenter (Intermediate). Also a brochure illustrating the Kuwait Unitary Lighting System and a leaflet giving details of the "Bradford" fitting for banks and offices.

SUN ELECTRICAL CO. LTD., 118-124 Charing Cross Road, London, W.C.2.—Brochure No. 114 illustrating the range of "Crystex in Perspex" domestic lighting fittings.

SYLVANIA ELECTRIC PRODUCTS INC., 1740 Broadway, New York 19, N.Y., U.S.A.—New two-colour folder describing the recently expanded reflector lamp line which summarises the 15 types now available.

TROUGHTON AND YOUNG (LIGHTING) LTD., Wansdown Place, Fulham Road, London, S.W.6.—Illustrated folder giving details and prices of a further extension to the "Mondolite" range of fittings.

WATERTIGHT FITTINGS LTD., Victory Works, 4-10 Newbold Road, Chesterfield.—Brochure illustrating the "Everyman" floodlight fitting, wellglass range and prismatic bulkhead fittings.

Miscellany

British Standard 2818: Part 3: 1957 Auxiliaries for Operation of Fluorescent Lamps: Starters, has just been published (BSI, 2, Park Street, London, W.1, price 4s. 6d.). This is the third and last part of the BS for accessories operating on 50 c/s supply. The object of the standard is to give the characteristics of auxiliaries used for the proper operation of MCF/U lamps complying with BS 1853. Part 3 relates to starters of the glow and thermal types and gives particulars of the testing and dimensions of two- and four-pin large canister type starters. Dimensions for gauges for the large canister starter contacts and for the corresponding sockets are given in appendices.

Obituaries

SIR JOHN HERBERT PARSONS

With the death of Sir John Herbert Parsons, C.B.E., F.R.S., on October 7, the "good lighting movement" in this country lost one of its most distinguished pioneers. Sir John's interest in lighting sprang from his great interest in the physiology of vision and his professional concern with visual difficulties and the diseases of the eyes. As an ophthalmic surgeon he came to be the acknowledged leader of his profession, and his longevity—he was 89 when he died—made him the doyen of British ophthalmologists. He was a founder member of the Illuminating Engineering Society and was invited to become its first president. This invitation he declined because he thought a physicist or engineer would be a more appropriate first choice. However, he accepted the office of chairman of the council and so took a leading part in the affairs of the new Society. When the first technical meeting of the Society was held, in January, 1910, it was Dr. Parsons—as he then was—who presented the first paper. His subject was "Glare, its Causes and Effects." It was followed by an extensive and international discussion. Not until 1921 did he become President of the Society, and during his year of office he was elected to Fellowship of the Royal Society. In the following year he was knighted, having been made a C.B.E. three years earlier. In 1913 he had been appointed a member of the Departmental Committee on Factory Lighting set up by the Home Secretary and he was reappointed when, in 1920, the committee resumed its work after the 1914-18 war. He continued to serve on this committee when it was again reappointed after the Factories Act, 1937, had, for the first time, made it a statutory duty for "sufficient and suitable lighting" to be provided in all factories. Sir John played an influential part in furthering researches into lighting and vision for many years, during which he was chairman of the Medical Research Council's Physiology of Vision Committee and a member of the Illumination Research Committee of the D.S.I.R. Although critical—as befits a man of science—he was quick to recognise and praise good work and ever ready to encourage and lend his support to able research workers. Those who knew him best knew him also as a humanist and philosopher. His interest in mankind was not limited to man's visual functions, disorders and perceptions—vast though such a sphere of interest is. Some indication of his wider range is given by his last book—published when he was 82—entitled *The Springs of Conduct*. But his best-known books are a four-volume *Pathology of the Eye*, a text-book on *Diseases of the Eye* (now in its eleventh edition), *Colour Vision* and an *Introduction to the Theory of Perception*. The Trans. IES (Lond.) for 1943 contain his last address to the Society, entitled "Light and Vision." He was a Fellow and Hon. Member of the IES.

ALFRED HENRY GOUDE

Mr. Alfred Henry Goude, Manager Head Office Sales, AEI Lamp and Lighting Co. Ltd., died suddenly on September 26, at his home in Barons Keep, West Kensington. He was 55 years of age.

Alf Goude was very well known in the electrical industry and was a member of both the IES and APLE. Born in Dunstable, he joined the BTH Co. Ltd. in 1919 and since 1940 successively held posts as Manager in charge of Lamp and Lighting Sales at Plymouth and Birmingham before joining the Head Office staff of the Company. He leaves a widow and a grown-up daughter.

I.E.S. ACTIVITIES

Presidential Address

At the opening meeting of the 1957-58 session of the Illuminating Engineering Society held at the Royal Institution on October 8, Mr. E. B. Sawyer was inducted as President of the Society and delivered his presidential address entitled "Lighting for Harmony."

Mr. Sawyer said that the time had come for a radical change in the outlook of lighting designers. A revolution in lighting design had been going on for some time and the effects could be seen in many types of modern buildings. It is, however, the exception rather than the rule for users to demand lighting which is imaginative instead of that which is of the highest efficiency and of the lowest cost. The future of lighting lies in planning installations which are suitable for their purpose with aesthetics as the foremost factor.

A change in the lighting engineer's approach became possible with the introduction of the fluorescent lamp, but the lamp came along at a time when efficiency was the dominant factor and when amenities had to be put to one side. Too many designers, however, were still obsessed with efficiency. As a rule lighting is satisfactory only when it provides the right psychological background for the particular purpose.

The closest possible collaboration between architects and lighting engineers has been advocated for a long time, but the universal complaint is still that lighting is an afterthought to be added as it can and at such cost as is permissible after all other services have been paid for. Perhaps this is because the majority of users have yet to be convinced of the value of a good lighting installation. On the other hand, the lighting engineer has not been sufficiently enterprising, imaginative and skilful in putting forward suggestions which please the architect and his client. This is because the emphasis during their training has been on engineering to the exclusion of everything that goes to build up the interest of a visual scene.

If installation design is based on appearance bearing in mind acceptable brightness and uniformity, it is almost certain that the illumination received at places where it matters will be at least adequate and probably well above the recommended minima. If an interior looks wrong it cannot possibly have the right lighting whatever the level of illumination; but if it looks right it is unlikely that the method of lighting is wrong.

The problem is how to educate ourselves, and users, so that we reject monotony and mediocrity and begin to appreciate what lighting can and should be. The fully equipped lighting specialist should understand not only lighting principles but also the elements of architecture and interior decoration and should have more than a cursory knowledge of electrical installation.

In the training of such specialists there is a parallel in industrial design. The shape and finish of appliances was formerly the responsibility of the engineer but with changing tastes in design the industrial designer was born; he is an artist by training and inclination but with further specialised training he has developed the necessary industrial appreciation and knowledge. Courses for interior design and industrial design may provide the basis for a course of study for the complete interior designer.

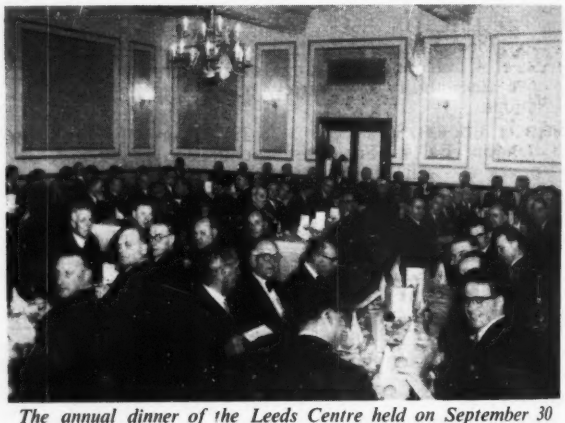
This is a long-term policy which should be developed to provide lighting specialists for the future. As a first step in the right direction heed should be taken of the comment of a prominent architect that lighting is an admirable subject for post-graduate study by architects. Lighting engineers should themselves take full advantage of the lectures on architecture which the Society has arranged.

Birmingham Centre

"Some 50,000 scientists would take part in the work involved in the present International Geophysical Year at an estimated cost of £150 million," remarked Mr. G. E. Kemp, in the course of his Chairman's address on the polar aurora at the opening meeting of the 1957-1958 Birmingham Centre programme.

Mr. Kemp first of all referred to his life-long interest in this subject, from his early days as a boy when he read the biographies of polar explorers, to the time when he made his own observations from lonely hill-tops in the small hours. He gave an account of the work of the international scientists who were taking part in the Geophysical Year and briefly mentioned what they hoped to achieve in the study of the universe. Mr. Kemp referred to the aurora and airglow, solar disturbances and solar flares, the upper part of the earth's atmosphere, and the ionosphere region and above where the aurora occurs.

Many interesting passages from the diaries of Dr. Nansen were read to the audience, and the whole interest of the aurora was emphasised by an account of its entrancing history from very early days. Mr. Kemp described how difficult it was to take photographs of the aurora; a six-position adaptor had to be used so that six photographs were



The annual dinner of the Leeds Centre held on September 30 when the principal guests were the Lord Mayor of Leeds (Ald. J. Hiley, J.P.) and the IES President, Dr. W. E. Harper.

taken on one plate. He illustrated his remarks with a collection of most unusual slides.

Mr. Kemp told his audience how the aurora caused considerable trouble to telephone engineers in northern countries, at times inducing in telephone line voltages in the order of 400 millivolt per km. length of line affected, and often in extreme cases several volts per km. The lecturer mentioned here that in lines of up to 100 km. this often leads to fatal voltages, and instanced a case where the telephone equipment was burned out by a current of ten amperes at 600 volts.

In closing Mr. Kemp said he had deliberately left out all complicated mathematics but his aim had been to give the broad outlines of our present knowledge of the aurora, remarking that he hoped that many of the remaining mysteries would be solved as a result of the observations by earth satellites and the combined and simultaneous observations of the great number of scientists co-operating in the International Geophysical Year.

Two former past chairmen, Mr. Lovel and Mr. Hanson, proposed and seconded the vote of thanks which was carried with acclamation.

FORTHCOMING EVENTS

LONDON

LECTURES ON ARCHITECTURE

At the Royal Institute of British Architects, Portland Place, London, W.1, at 6 p.m.

November 7th

"A Review of Present Architectural Thought and Trends," by H. T. Cadbury-Brown, F.R.I.B.A.

November 14th

"School Design," by D. L. Medd, A.R.I.B.A.

November 21st

"Modern Planning Trends in Office Buildings and Factories," by John Bickerdike, A.R.I.B.A.

November 27th

"Planning the Interior: the Expression of Current Ideas and Requirements," by Bryan P. Westwood, F.R.I.B.A.

These lectures have been arranged in collaboration with the Science Committee of the R.I.B.A.

November 12th

Sessional meeting. "Artificial Lighting for Museums and Art Galleries," by W. E. Rawson-Bottom and J. B. Harris. Tea at the Victoria and Albert Museum (5 p.m.). Visit to Electrical Power Collection at the Science Museum (5.30 p.m.). Lecture at the Science Museum (6 p.m.).

CENTRES AND GROUPS

November 6th

CARDIFF.—"Lighting of Shops and Stores," by R. L. C. Tate. (At the Demonstration Theatre, South Wales Electricity Board, The Hayes, Cardiff.) 6 p.m.

EDINBURGH.—"Lighting in Relation to Modern Ceilings and Roofs," by Derek Phillips. (At the Y.M.C.A. Social Room, 14, South Saint Andrew Street, Edinburgh.) 6.15 p.m.

MANCHESTER.—Annual Dinner. (At the Cafe Royal, Peter Street, Manchester.) 6.30 for 7.0 p.m. Informal dress.

November 7th

BIRMINGHAM.—Ladies' Night.

GLASGOW.—"Lighting in Relation to Modern Ceilings and Roofs," by Derek Phillips. (At the Lighting Service Bureau of Scotland, 29, St. Vincent Place, Glasgow, C.1.) 6.30 p.m.

NOTTINGHAM.—Forum—Street Lighting. C. S. Caunt, B. M. Cobbe, E. Howard and G. C. Small. (At the Demonstration Theatre, East Midlands Electricity Board, Smithy Row, Nottingham.) 6 p.m. Refreshments 5.30 p.m.

SWANSEA.—"Lighting of Shops and Stores," by R. L. C. Tate. (At the Demonstration Theatre, South Wales Electricity Board, The Kingsway, Swansea.) 6.30 p.m.

November 11th

SHEFFIELD.—Presidential Address, by E. B. Sawyer. (At The Grand Hotel, Sheffield.) 6.30 p.m.

November 12th

NEWCASTLE-UPON-TYNE.—"The Design of Lighting Glassware," by S. S. Beggs. Joint meeting with the N.E. Section of the Society of Glass Technologists. (At Sunderland Technical College.) 6.15 p.m.

STOKE-ON-TRENT.—"Shop Window and Store Lighting," by R. L. C. Tate. (At the North Stafford Hotel.) 6 p.m.

November 18th

BATH AND BRISTOL.—"What Do We Know About Lighting," by R. J. Fothergill. (At the South Western Electricity Board, Bath.) 7 p.m.

November 19th

GLOUCESTER AND CHELTENHAM.—"How to Live with Light," by R. J. Fothergill. (At the Fleece Hotel, High Street, Cheltenham.) 6.30 p.m.

LIVERPOOL.—"Illumination in Relation to Gem Stones," by N. W. Kennedy. (At the Committee Rooms of the Liverpool Passenger Transport Office, 24, Hatton Garden, Liverpool 3.) 6 p.m.

November 20th

TRANSVAAL.—Forum on Lighting Materials. (At Room 95, Public Library, Johannesburg.) 8 p.m.

TEES-SIDE.—Film Show. (At the Cleveland Scientific and Technical Institution, Corporation Road, Middlesbrough.) 6.30 p.m.

November 22nd

GLASGOW.—Luncheon Meeting.

November 25th

LEEDS.—Ladies' Evening—"New Light upon Cosmetics," by Miss Gallagher and Mrs. Naylor. (At the Lighting Service Bureau, 24, Aire Street, Leeds, 1.) 6.15 p.m. Refreshments 5.30 p.m.

LEICESTER.—"Road Vehicle Lighting," by G. E. Charlesworth. (At the Demonstration Theatre, East Midlands Electricity Board, Charles Street, Leicester, entrance Rutland Street.) 7 p.m.

November 26th

LEEDS.—"Exterior Lighting at a Modern Airport," by J. Morse. (At the Yorkshire Electricity Board, Ferensway, Hull.) 6.30 p.m. Refreshments from 6 p.m.

November 29th

BIRMINGHAM.—"Lighting of Educational Institutions," by J. R. Sheridan-Shedden. (At Wolverhampton.) 6 p.m.

LEICESTER.—Social Evening. (At the Coronation Hotel.) 7 p.m.

Personal

MR. WILLIAM C. ROWLAND, of Entebbe, Uganda, was the only overseas entry in the City and Guilds Illuminating Engineering Intermediate Examination. He took his examination at Kampala, Uganda, and secured a first-class pass.

MR. H. G. LILLEY has been appointed Deputy Manager of the Lighting Department of the AEI Lamp and Lighting Co. Ltd. His office is at Mazda House, 44, Fitzroy Road, London, N.W.1. Mr. Lilley served his electrical apprenticeship in Cambridge and in 1935 joined the BTH Company, opening the BTH Cambridge Depot in 1936. He was Manager of the Depot from 1936 to 1955, with the exception of a period of army service from 1943 to 1946. In 1955 he was appointed Assistant Regional Manager (Lighting) of the Midland Region, AEI Lamp and Lighting Company, based on Birmingham.

MR. G. HONNORATY has been appointed the new Midland Regional Manager of the AEI Lamp and Lighting Co. Ltd., in succession to the late MR. R. P. B. VOADEN, who died in August.

Mr. Honnoraty was appointed to the BTH Sheffield Office in 1924 and from 1926 to 1933 was in BTH Hull Office. He was transferred to the Nottingham Office in 1933 and from 1947 to 1953 was Manager, Lamp and Lighting Sales, Nottingham. In 1953 he was appointed Manager, Lamp and Lighting Sales, of the BTH Birmingham Area Office, and on the creation of the AEI Lamp and Lighting Company in 1955 he was made Birmingham Area Manager of that Company.

MR. J. N. DAVENPORT has been appointed lighting representative for the Bolton/Wigan area of the North West Region of Philips Electrical Ltd.

Stella Lamp Co. Ltd. announce that MR. W. P. B. GREY have been appointed Sales Manager of their Southern Area as from 1st September. Mr. Grey was formerly employed in the plastics industry and joined Stella in October, 1953, as a London representative. He was made London Sales Supervisor in April, 1954, and Southern Area Sales Supervisor in January, 1956.

After 30 years, MR. A. E. ILIFFE, Director and General Sales Manager of The Benjamin Electric Ltd., relinquished his post of General Sales Manager on the 3rd October, 1957, but continues actively with the Company as Director of Sales.

As from that date, MR. J. O. K. PURDEY has been appointed to the position of General Sales Manager. He was formerly Assistant Manager (Lighting Sales Division) AEI Lamp and Lighting Co. Ltd.

POSTSCRIPT By 'Lumeritas'

FOG—that bane of the night driver—has already made an unwelcome visitation. The most modern of street lighting is powerless to assist the vehicle driver if the fog is dense, but a recent unpleasant drive, which took me through streets where every current system of lighting was exemplified, left me in no doubt that the best of a bad business was made by an up-to-date sodium installation. Car lights, whether fog-lamps or dipped headlamps, are also ineffective in really dense fog. But the motorist's greatest aid to progress—apart from the tail lights of the car in front which sometimes seems to be driven by someone with fog-piercing eyes—are white lines and cat's eyes. Things would be even better if the nearside of the road could be made more visible by, say, a yellow line or red cat's eyes. The latter, I know, is already done here and there. Of course, such guides could not ensure that one found the right road and so ultimately reached one's destination. None the less, one might manage to keep on the road to somewhere instead of wandering on to the sidewalk or into a ditch!

THE 3,000 residents of St. John's Wood who sent a petition to the Marylebone Borough Council protesting against a proposed installation of sodium lamps and concrete lamp standards have received a circular setting out the council's views. This rightly points out that street furniture cannot be made to harmonise with a background a century or more in age without bogus "olde worlde" attempts. And if such attempts are to be made where is the line to be drawn? "Sand-bins, telephone kiosks, traffic signs and signals can no more harmonise with a past-century background than do the motor-cars along the kerb or the television aerials." There is no denying this and it should not be forgotten by those who are most vocal in their condemnation of concrete lamp standards. But, of course, I am not implying—and I am sure the Marylebone Council is not—that concrete lamp posts do not need to be selected partly on the basis of such aesthetic merit as they exhibit, even though they may still be incongruous in a given setting. A writer to *The Times* blames the failure of local authorities to select the best lighting columns "on the architects, industrial designers, landscape architects, painters and sculptors who have specialist training in the visual arts and yet stand aloof from local affairs." I wonder if his faith in the judgments of the contemporary specialists in the visual arts is really well placed? As for sodium lamps, the M.B.C. has chosen two similar roads in its area and is equipping one with fluorescent lighting and the other with colour-corrected mercury so that residents can compare these with each other and with sodium in other roads.

BEFORE his death on October 7, Sir John Parsons was the oldest surviving past-president of the IES. A quiet and unassuming man—like many another who has come to true greatness—his worth could easily have been under-estimated by those who met him without already knowing him "by his works." Yet, as Lord Adrian said of him on his eightieth birthday, he was "the adviser of governments, and the expert whose opinion is indispensable in all the varied problems where human vision is concerned." He was, as mentioned elsewhere, a most eminent ophthalmologist, and the advancement of knowledge relating to all aspects of vision, including lighting, was an aim which he kept constantly before him. Apart from his own contributions to such knowledge, he may be said, in a sense, to have fathered a band of research workers who have themselves made important contributions to the subject and are now eminent in their own right. I know that this success of his protégés, as well as of others, was a source of genuine pleasure to him. He never lost his interest in them and their work and they, in turn, came to combine with respect for this kindly man real affection and gratitude. To them it is certain his passing will bring a sense of personal loss. Sir John and his friend the late Sir Duncan Wilson—also a past-president of the IES—were the only two members of the Departmental Committee on Factory Lighting who served throughout the long history of this committee and who therefore signed all five of the committee's reports. As fate would have it, Brigadier-General Sir Atwell Baylay, C.B.E., D.S.O., who was appointed only in 1940 to the Factory Lighting Committee as representing engineering and allied employers, died at the age of 78, one day before Sir John's decease. He was a signatory of the committee's fifth report, which contained the well-known recommendation for a minimum illumination of 6 lm/ft^2 over factory working areas.

THE Russian artificial satellite has been the most remarkable item of news in recent weeks. Putting aside all irrelevant issues, the successful launching of this satellite must be conceded to be an example of Russian scientific skill and initiative which deserves admiration. It is also an event which should warn the rest of the world not to underrate the quality of Russia's scientific manpower nor her potentialities for future achievements. I do not pretend to understand what ultimately may come out of experiments of this kind—which are beginning to make the science fiction of my boyhood seem unimaginative. But I take a sceptical view of the reports that the satellite has actually been seen—at least with the naked eye. If my calculations are not at fault, the visual angle subtended by the satellite at an observer's eye is so extremely small that, whatever transient luminance it is likely to have, it seems to me unlikely that it can be distinguished. However, photographs have been published of the track of its following rocket. It would be rash to conclude that sizeable artificial moons are unattainable. So much has happened in our time that once seemed too improbable for serious consideration that only the wisest or the most foolish among us may venture upon predictions: I am not in the first of these categories nor, I hope, in the second!